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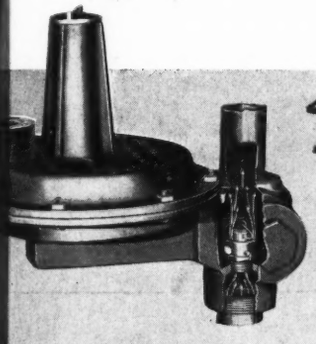
Now! EMCO Type "B" Ejector REGULATOR WITH INTERNAL RELIEF VALVE



The Ejector Principle

AUTOMATICALLY INCREASES OUTLET PRESSURE WITH INCREASED LOAD

The EMCO Type B Ejector Service Regulator provides the gas distribu- engineer with three definite improvements in service regulator performance fective automatic loading, low shutoff and increased capacity.

In earlier service regulator designs, when the consumer used more gas, the t pressure, gauged a few inches from the outlet of the regulator, went down. gave a bad effect, in that along with increase in volume, the drop through meter increased as well as the drop through the piping to the appliances, at as more appliances were added to the load, the pressure at the appliances ped and combustion was adversely affected.

The advent of the EMCO Type B Ejector Regulator, in which the outlet ure is automatically increased as the rate of flow through the regulator eases, enables the distribution engineer to successfully combat this condi- and at the same time affords a means for the gas company to provide more factory service to its customers and to better its public relations.

It is of extreme importance that service regulators, whose principal function is to reduce higher distribution pressures to safe pressures for the meter and house piping, perform this task of reducing with a maximum of safety. Over-pressure in the house piping can have some very serious effects. First, leaks due to over-pressure on the meter or some other part of the system might result; also pilot valves may not function properly or be extinguished; and, even more important, burners might generate carbon monoxide while operating at a pressure higher than that for which they are adjusted.

In the past several methods to avoid this over-pressure condition have been used. The mercury seal and dead-weight safety valve methods have been the most commonly used. Both have certain inherent design defects which have worked against their universal adoption.

A very successful, satisfactory and simple solution to this problem of safety is offered in the EMCO Internal Relief Valve, shown in the sectional view below. In this design a high degree of accuracy both in relieving and in resealing is obtained by using the entire main diaphragm as the relieving pressure area. Thus, once the blowing point is determined, it will operate at this point exactly when required, and reseal, on the pressure decreasing, at a point consistently close to the blowing point.

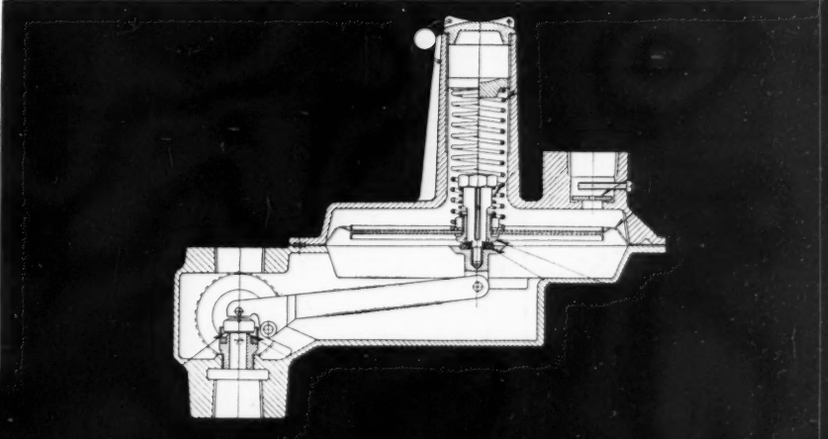
The use of the internal relief valve in combination with the Ejector principle provides, in the EMCO Type B Ejector Regulator, safety and exceptional regulation performance.

For complete information about the EMCO Type B Ejector Regulator with Internal Relief Valve request a copy of Bulletin 1065.

How it works—

ration of the internal relief valve is ained by referring to the accompa- g illustration. In normal operation, pressure regulator under standard conditions, spring I operates to hold valve n seat II. Spring I is a heavy, non-adjustable spring, and can exert a very strong to insure a tight closing of the valve III, on soft seat II. If because of dirt on the regulator valve, or a nicked seat, main valve B fails to close, pressure will build nder the main diaphragm IV above the normal lock off pressure. When this pres- increase, multiplied by the area of the large diaphragm IV, is sufficient to over- spring I, valve III is raised off its seat, and the excess pressure is relieved gh the fluted area of valve III, into the top diaphragm chamber. Thence, this lows out through vent connection V, by raising breather disc VI. Obviously, connection must be piped to a safe place for the venting of unburned gas. On ving this over-pressure, spring I will close the valve. Valve III is guided accu- y to its seat, thus insuring a positive shutoff.

It will be seen that spring I is selected to operate at a definite rise in pressure e a *normal lock off pressure*. Thus, the relieving pressure will vary with the tment pressure, insuring sufficient gap between the two under all conditions at a too frequent blowing of the seal will not take place, but providing a ive relief below any dangerous pressure.



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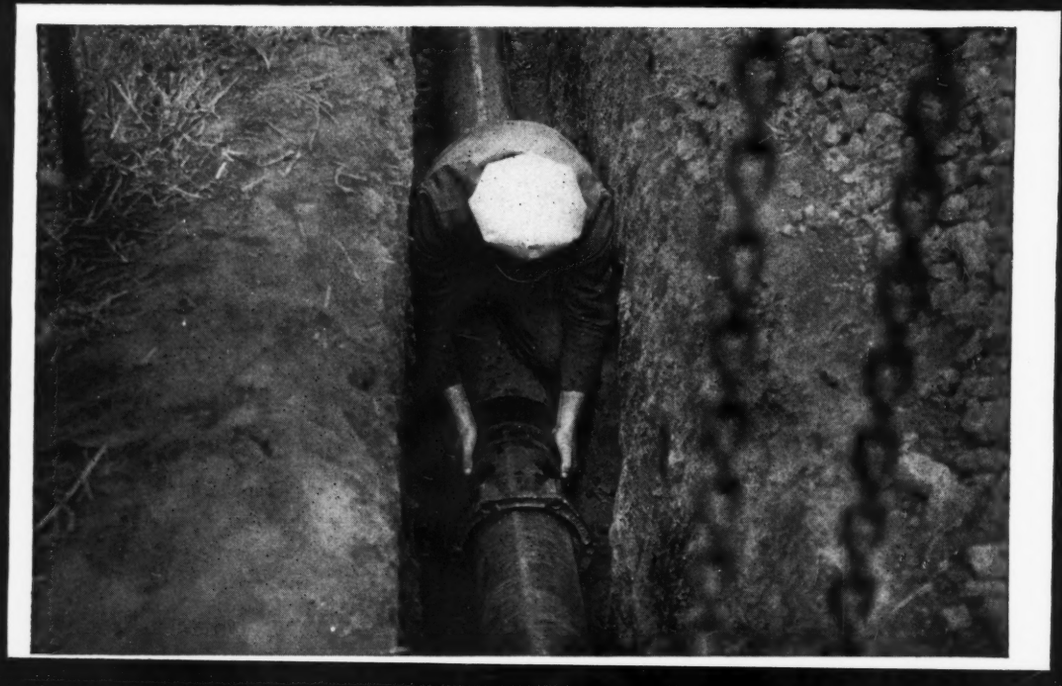

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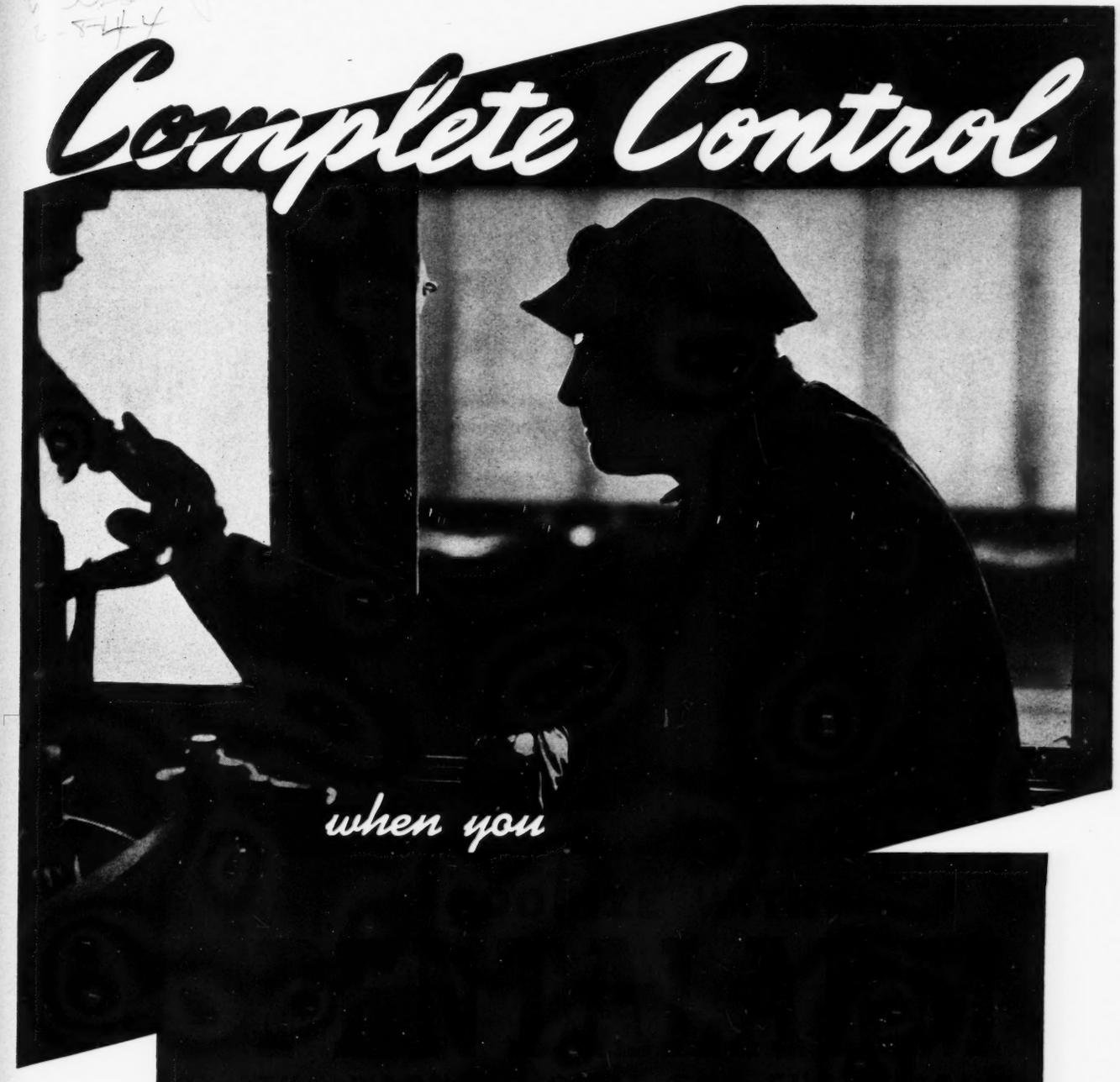

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GAS

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Seventeenth Year of Publication

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GUEST Editorial

"Gas Living"

For Defense Workers

By WILLIAM F. RABER

President, San Diego Gas & Electric Company, San Diego, California

ASSIGNMENT, over night, of a half billion dollars in National Defense funds would probably create abnormal conditions anywhere, particularly if the word "RUSH" was indelibly stamped on each item of expenditure, and San Diego found she was no exception. It was, however, a challenge to American initiative, the like of which few cities are privileged to accept. We soon realized that the word "abnormal" was hardly adequate to describe the brief period allowed for the shifting into high gear of aircraft production, the building of homes by the thousands for defense workers, and the construction of huge cantonments for training all branches of our military service. San Diego has long been recognized as a naval, air-force and marine base of first importance, but these units, too, are being expanded as fast as facilities can be provided.

There is but little doubt that we serve one of the fastest growing areas in America, although such a distinction also carries with it certain problems that must be faced and solved.

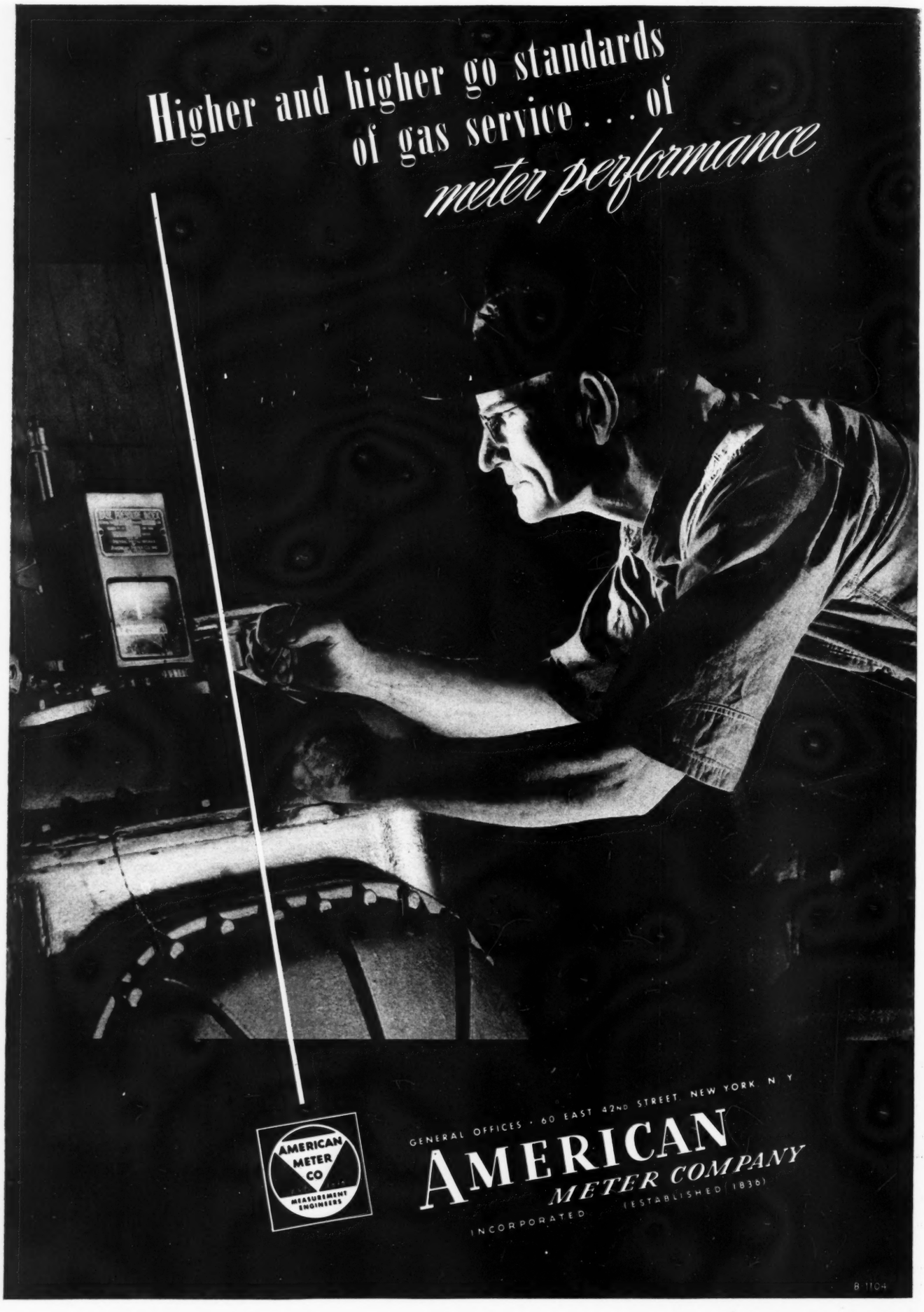
Fortunately, we have been able to meet emergency demands for gas and electric service only because of our long standing policy of preparing for future normal growth well in advance of realization. We had only to speed and enlarge our established construction program, and few difficulties have as yet been encountered.

Problems of a civic nature, however, have been more complex. It is estimated that the influence of National Defense, coupled with the normal growth, will increase the population of our territory from 25% to 30% by the end of this year. Including the 4000 governmental housing units, it is further estimated that over 7500 new family units will of necessity be completed within a 10-month period.

Such figures spell temporary housing shortages, traffic congestions and crowded business establishments. New and enlarged highways are being built, educational facilities increased, sewage problems overcome, and adequate police and fire protection provided.

Despite the inconveniences incidental to rapid growth, we in San Diego are proud to have such an important position in the program of National Defense. I am personally proud of the part assigned to natural gas, both in the manufacture of aircraft and in providing the conveniences of modern "gas living" for the thousands of defense workers and enlisted personnel who will occupy the government housing units and training quarters.

We are aware that some portion of our new business is of a temporary character, but we believe that the impetus of National Defense, particularly in the field of aviation, will continue to be felt under normal conditions.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THERMALLY *Thinking*

All Paths May Sever

WE do not presume to speak for the manufactured gas section of the Gas Industry, but we are heartily in accord with the contention made by Albert Sidney Johnson, president of the Southern Union Gas Co., Dallas, Tex., in his recent address before the Southern Gas Association convention, when he said in effect: the Natural Gas Industry is suffering from the sins of the monopolistic utilities that have preceded it.

Urging that natural gas abandon the "hush hush campaign of dignified silence," he advocated the immediate undertaking of an "intensive institutional advertising campaign, . . . truthful, sincere, and persistent." Such a campaign, in the opinion of the speaker, "in the final analysis, has to be put over by the executives and employees of the natural gas industry."

We have long been pondering the increasingly obvious fact that in industry promotion the interests of manufactured gas and of natural gas require separate consideration and individual treatment. It is true that in promotions designed to increase the domestic cooking load, add new commercial users, and convert certain industrial processes to gas, there exist parallel activities so close as to make them almost identical.

But natural gas cannot afford to preoccupy itself forever with increasing the send-out in existing communities. It may pause to consolidate its position, but it must soon again be on the march. It must not only address itself to new *users* of gas; it must address itself to new *uses* of natural gas; not just new homes, but broad new horizons must constitute its ultimate goal.

On such a program, and with such an avowed objective, natural gas cannot tarry with those whose vision is shorter, nor can it accommodate its pace to those who would walk with a laggard step. Misguided loyalty to other utilities who rightly or wrongly have earned public opprobrium, can only hold back the industry and serve no valid purpose.

Where mutual problems confront both manufactured gas and natural gas utilities they should be dealt with in the same spirit of mutual cooperation that exists today. We believe that none have been more ready than the natural gas utilities to adapt their plans to such mutual cooperation. But where paths diverge, and plans and programs lose their common identity, the sound policy is for each section of the great gas family to pursue its own course, always amicable in spirit but never confused as to the true identity of its ultimate best interest.

The place in the sun that natural gas deserves can be won only as the natural gas industry plans its own objectives, maps its own campaigns, and proceeds with singleness of purpose towards its appointed destiny.

Reserves Unknown

THE Natural Gas Industry has a job to do, and the sooner we get around to it the better. That job is to set up the machinery and delegate the necessary authority whereby an accurate and continuing estimate of the gas reserves of every producing area may be compiled and made available to answer any legitimate individual, governmental, trade, or financial inquiry.

We are constantly striving to the end that natural gas may be extended into ever wider and more ramified fields of usefulness. We present our engineering and our economic studies, sometimes designed to justify new and much needed pipe line extensions, and sometimes aimed to accomplish the conversion of some new industry over from an inferior fuel.

We do all of this sound preliminary work, we establish a bomb-proof case; we present that case to whatever authority sits in judgment on the validity of our claims. And we leave the whole proof of all of our contentions wide open to the argument of some weasel who by sly insinuation, or by reference to some out-dated estimate of the amount of gas available, proves that natural gas reserves are strict-

More Than 5000 Copies This Issue

ly limited and that it is only a matter of a few years until they will be in a constantly dwindling supply.

This is the most bare-faced maligning that any industry has ever submitted to. Yet the natural gas industry lies down and takes it, in spite of the fact that natural gas reserves have been constantly on the increase ever since the first midcontinent fields were brought in—and that was over 30 years ago.

So we say, "Well, of course, the question of reserves is a very controversial one, because after all no one knows exactly what is under the ground."

That is only evading the issue. No one knows how much oil is under the ground, either, yet the American Petroleum Institute regularly issues figures that give anyone who wants to know, the estimates of the oil reserves. With each new field brought in, these figures have had to be revised upward until now the estimate is 20,099,250,000 barrels which, despite last year's withdrawals, shows a gain of nearly half a billion barrels over the previous year.

No one knows exactly how much coal is under the ground, either. Yet the coal interests in a recent statement quote estimates by "responsible engineers that the readily recoverable reserves of coal and lignite in the United States at present amount to over 1,600,000,000,000 tons — sufficient to last for at least 3000 years." Subtract a few centuries for understandable over-enthusiasm, and we still must admit that the coal industry is not hampered by lack of a walloping big estimate of its long-time ability to supply fuel.

Against these and other Gargantuan projections that stop just about six months this side of eternity, the natural gas industry has nothing to offer. Every natural gas man knows, or believes, that the gas supply, too, is well nigh inexhaustible. But when he is called upon to prove his contention he reaches in vain for the facts that would aid him. Enemies of natural gas extension (and they are not by any means all in the coal industry) may claim that in 20 years or in 30 years the natural gas supply will be exhausted. Everyone knows such claims are false, but no one can satisfactorily prove otherwise.

The question of natural gas reserves should rest on the scientific estimates of reputable geologists and engineers, in most instances the same technicians who have already made private estimates for practically every oil and gas producing company of any size in any producing area. The sum total of these estimates would not be infallible, but they would have a standing that would make it impossible for those who would retard the natural gas program to do so on the grounds that after a decade or two the reserves will flicker out like a light.

Not only the good of the industry, but the enlightened self-interest of the individual companies demands that these reserve figures be compiled, brought down to date and kept current. Adequate financing for pipe lines, the market position of natural gas securities, and even the continued expansion of high octane recovery of gasoline from natural gas all are sorely in need of the support that such factual information can give.

If natural gas is the potential giant in the heat and power field that its enthusiastic proponents believe it to be, a sound estimate of the known reserves will hasten the day of its triumph. And if it is merely a passing fad as its enemies would have the public and the government itself accept, we might as well learn the sad truth ourselves.

Of Community Development

THERE are many ways in which an aggressive and imaginative gas company can be of service to its community. Some of these were commented on in a paper on "Community Development," presented by J. H. Warden, general sales manager of the Oklahoma Natural Gas Co., before the Southern Gas Association convention last month.

Mr. Warden points out: "Last year we carried on a contest, 'The Cost of Accidents Is Human Misery—How Can They Be Eliminated in Oklahoma?' This contest has received publicity throughout the state, and has done a great deal to place our organization in the position of taking an active part in the welfare of the citizens of the state." Other companies, too, stated Mr. Warden, have been active—"The Michigan Consolidated Gas Co. at Muskegon, Mich., has sponsored an enthusiastically received flower show; Houston Natural Gas Co. is conducting a Garden Club Program; United Gas Co. has been advertising 'The Gulf South' on a national scale; The Amarillo Gas Co. issued a bulletin on the assets of Amarillo."

It is such activities as these that contribute toward the growth and development of the community, and which further assure the survival and success of the gas company as a part of the community.

In GAS for April

The April issue of GAS will present as one of its features an article on carbon black, its manufacture, its importance to the national defense.

Carbon black production is probably associated in the average person's mind with inefficient or even wasteful use of natural gas. On the contrary, it is a highly important and carefully controlled process, to a large degree utilizing gas that is not suitable or conveniently available for other purposes. Carbon black plants have for many years been the principal source of the carbon which is an important constituent of automotive tires and similar rubber goods, and inasmuch as most defense equipment moves on or otherwise depends on rubber, this orphan of the gas industry has blossomed into a producer of an essential war material. The forthcoming article gives a comprehensive description of the various phases and aspects of this interesting process.

The April issue of GAS will feature also the second article in the series on gas-fired air-conditioning equipment. This series begins in the current issue with a description of the equipment manufactured by the Bryant Heater Co. of Cleveland, Ohio. This article begins on the opposite page.

Gas-Fired Air Conditioning

1. Operating Principles; Sales Potentialities Of The Bryant Heater Company Equipment

By H. W. HEISTERKAMP

Manager, Air Conditioning Sales,
The Bryant Heater Co., Cleveland, Ohio

THROUGHOUT the United States are hundreds of average-sized and thriving communities. Let us visit briefly the imaginary city of Summerville, a typical American town. Summerville is made up of 20 or so industrial plants, several department stores, theatres and a multitude of shops and stores from which most of its inhabitants directly or indirectly derive their livings. Among the other assets of Summerville we may list an enterprising public servant, the Summerville Natural Gas Company.

It is the privilege and duty of this gas company to furnish this community with that fuel, which is best adapted for the four big jobs—cooking, water heating, space heating, refrigeration.

It is the further duty and desire of the Summerville Natural Gas Co. to serve its community in any specialized manner that might arise. Along this line, company engineers have worked out the installation of the submerged burner in the pickling tank of the Gauge and Instrument Company, the continuous paint drying oven for the Specialty Manufacturing Company, the gas-fired unit heater installation for the Goodman Printing Company. And, increasingly important specialized service of the Summerville Natural Gas Company has become the solution of problems of temperature and humidity —air conditioning.

The field of application of gas-fired air conditioning equipment is almost unlimited, and each installation is likely to present problems demanding unique specifications and individual treatment. However, before we go into the vast sales potentialties of gas fired air conditioning in Summerville, let us first examine the equipment which makes this service possible. The following is a detailed account of the equipment manufactured by the Bryant Heater Co. of Cleveland, Ohio.

TECHNICAL DATA

The essential elements of both comfort and industrial air conditioning are the control of the two distinctly different properties of air—humidity and temperature.

The Bryant Silica Gel Dehumidifier removes moisture from air by the process of physical adsorption. With this method, the moisture carried in the air in the form of vapor (humidity) is condensed within the pores of Silica Gel (the most effective solid adsorbent known), transforming the latent heat into sensible heat, which is subsequently removed by surface coolers. Humidity in air is thus controlled by this dehumidifier as a direct operation without resort to low temperature cooling. Temperature control is accomplished as a separate and distinct operation by whatever means is best and cheapest for the particular installation.

Designed around this principle of independent control of humidity and temperature, the time-tested Bryant Dehumidifier embodies all the advantages of adaptability, effectiveness and economy. A detailed description of these standardized units follows:

The Bryant Stationary Bed Type Dehumidifier: The specifications for this type dehumidifier are given in Table No. 1.

The Bryant Silica Gel Dehumidifier is designed primarily for use with gas as an activating medium. However, very frequently in industrial work high pressure steam is preferable for this purpose. In these cases Dehumidifiers for steam activation are available. Such units require steam pressures of 100 lb. gage or higher, and the addition of steam heating sections. Dehumidifying performance is shown in Fig. 1.

All Bryant Silica Gel Dehumidifiers are adapted primarily to central plant air conditioning systems. They deliver a constant supply of dry air when in operation, and turn off and on automatically under control of a humidistat in the conditioned space.

A Bryant-Silica Gel Dehumidifier contains two separate compartments of Silica Gel adsorbing material. The

WITH THIS ARTICLE by Mr. Heisterkamp, GAS is presenting the first of a series of six articles on gas-fired, summer air conditioning, its equipment and potential market.

Summer air conditioning for such structures as hotels, office buildings, theaters and better class residences is rapidly changing from a luxury to a necessity, and therefore has an enormous potential application limited only by the development of trouble-free, efficient and economical apparatus, and a thorough engineering knowledge of the various aspects of proper installation. The economy of gas-fired apparatus, together with the obvious advantage of an augmented summer load, makes air conditioning extremely attractive to the gas industry and a fertile and profitable field for young engineers.

Contemporary apparatus and equipment have gone well beyond the first stages of development, and a careful study of the various types now in use will give an excellent background to those desirous of engaging in this type of work. This series of up-to-date articles should therefore be particularly attractive to all those engaged in developing, selling, engineering, installing and maintaining the most modern of scientific contributions to human health and comfort.

H. W. HEISTERKAMP

Mr. Heisterkamp, a member of the American Society of Heating and Ventilating Engineers, is a graduate of the Case School of Applied Science, class of 1931. He has seen service with the factory engineering staff of the Frigidaire Corp., where he applied himself to the problems of commercial and domestic refrigeration and test engineering on air washer systems. In 1933 the author joined the Bryant engineering department in the development of heating equipment and dehumidifiers. Since his transfer to that company's sales engineering department, covering dehumidifier field application, Mr. Heisterkamp has become recognized as an expert on installation and an authority on Bryant's Silica Gel Dehumidifiers.—Editor.

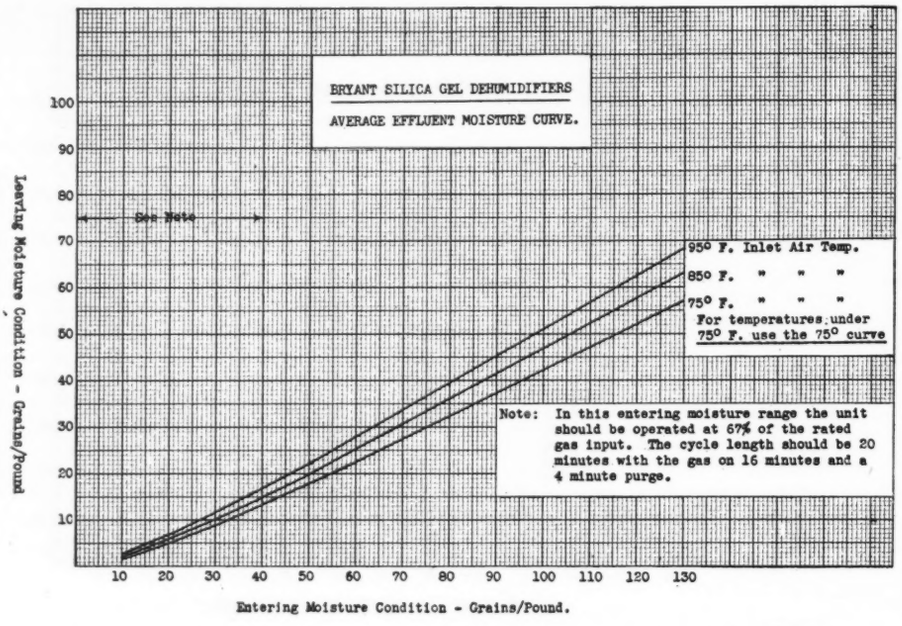
BRYANT SILICA GEL DEHUMIDIFIERS
AVERAGE EFFLUENT MOISTURE CURVE.
See Note
950 F. Inlet Air Temp.
850 F. " " "
750 F. " " "
For temperatures under 75° F. use the 75° curve
Note: In this entering moisture range the unit should be operated at 67% of the rated gas input. The cycle length should be 20 minutes with the gas on 16 minutes and a 4 minute purge.
Leaving Moisture Condition - Grains/Pound
Entering Moisture Condition - Grains/Pound.

FIG. 1. Average effluent moisture curves for silica gel stationary bed dehumidifiers.

air being treated is passed alternately through one compartment and then through the other. At the time one compartment is treating air, the other compartment is being activated, the alternating of these operations being under the control of automatic dampers.

Air Flow: A detailed description of the stationary bed type is as follows, (see Fig 2): The two Silica Gel compartments (A-B) are located along the length of the machine. Each compartment consists of three or more separate beds in which the adsorbing material is supported between screens. These beds are so arranged that part of the air passes through each one, as shown in the sketch. This gives the effect of a wide bed, confined to a compact space.

The air being dehumidified passes through the beds in an upward direction, whereas the air used for activating the Silica Gel passes through them in a downward direction. This counterflow results in a self-cleaning action of the beds.

Contained within the compartments at both the top and bottom, are two chambers in which are located twin two-position four-way dampers, D_1, D_2 that control the passage of air through the two compartments. These chambers are designated as follows:

C_1—Activation inlet chamber.
C_2—Activation outlet chamber.
C_3—Adsorption inlet chamber.
C_4—Dry (dehumidified) air outlet chamber.

The dampers, both in the same vertical plane and connected to a common shaft, open chambers (C_1 and C_2) to either compartment (A) or (B). Simultaneously Chambers (C_3 and C_4) are opened to either (B) or (A).

Activation Cycle: Hot activation air from the gas burner (H) is drawn through chamber (C_1) and is directed by Damper (D_1) downward through the Silica Gel compartment, past Damper (D_2) and into the activation outlet chamber (C_2). From there it is drawn through Fan (F_2) to the exhaust stack (X) carrying with it the moisture which has been removed by the Silica Gel beds during the previous period.

Adsorption Cycle: The air to be dehumidified is drawn in through duct (G) to the adsorption inlet chamber (C_3) past damper (D_2). It is forced upward through the Silica Gel compartment and guided by damper (D_1) into the dry air outlet chamber (C_4) from whence it goes to the supply duct (S).

Cycle Control: The Dampers are shifted automatically once every 10 minutes under the control of an electric timer. While one Silica Gel compartment is adsorbing for a 10-minute period, the other compartment is being activated for seven minutes and "purged" for three minutes. This purging period is necessary in order to cool the Silica Gel to the point where it will again adsorb water vapor. Purging is accomplished automatically by the electric timer, which turns off the gas burners and allows unheated air to pass through the Gel beds.

The timer, operated by an electric clock, is provided with a holding circuit which prevents the machine from shutting down until the completion of its cycle should the humidistat become satisfied during an activation period. The starting relay for connection to the humidistat is provided with an overload protection.

The dampers are shifted by a rod and crank-arm linkage driven by a small geared head motor (M_1). The complete shift requiring from three to five seconds is started by a contact on the electric timer and is stopped by a limit switch actuated by the crank arm which breaks the electric circuit when the dampers have moved into their new position.

Gas Burner for Activation: The air for activation is heated by a gas burner (H). The products of combustion from the heater are mixed directly with the air drawn in for activation through the grille opening (O). The gas and air ratio is so adjusted as to give an inlet activation air temperature of approximately 325° when the burner is operating at its rated input.

The burner equipment includes a standard Bryant snap valve and a combination thermostatic pilot and

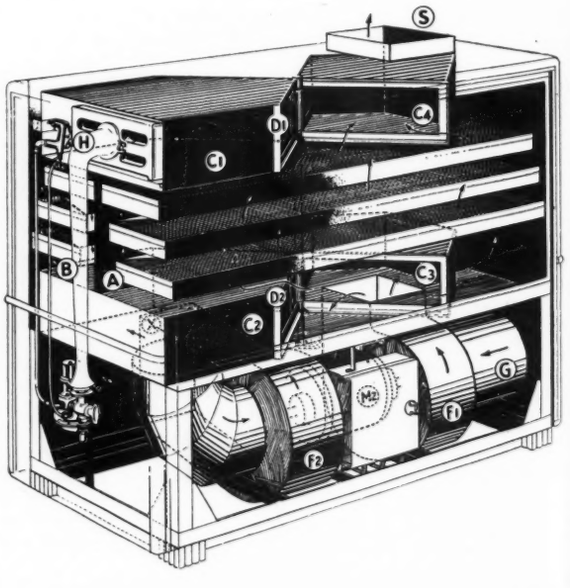

FIG. 2
The Bryant silica gel stationary bed dehumidifier.

escapement burner. The "off" and "on" operation of the burner is controlled through a solenoid valve in combination with the dependable, gas-actuated snap valve. On one side of the combustion chamber there is a 2-in. vent opening (V) which may be connected to the activation exhaust stack for the purpose of venting the pilot during the "off" time of the machine.

Fans and Motors: The adsorption fan (F_1) and the activation fan (F_2) are mounted directly on the two shaft extensions of motor (M_2). The entire adsorption or treated air stream is under pressure, and the activation air stream is under suction.

The Bryant Rotary Type Dehumidifier: Dehumidifying performance is shown in Fig. 3, Rotary type dehumidifier specifications are given in Table No. 2.

The air capacity of these dehumidifiers varies with the moisture content of the entering air. In delivering these air quantities, the adsorption fan is working against the resistance of the unit plus the resistance of a standard dry air cooler. The "nominal" ratings are based on inlet air with a moisture content of 100 grains per lb.

The Bryant Silica Gel Dehumidifier is designed primarily for use with gas as an activating medium. However, very frequently in industrial work high pressure steam is preferable for this purpose. In these cases Dehumidifiers for steam activation are available. Such units require steam pressure of 100 lb. gage or higher, and the addition of steam heating sections.

When the unit is operating in an atmosphere where dust conditions are abnormal, filters should be installed on both the activation and adsorption inlets.

If a Dehumidifier is to be installed within the conditioned space, the activation supply air should be brought into the unit through a duct from without the conditioned space. Similarly, for residential work, it is preferable to bring the activation air through a duct from outdoors into the unit. This will allow the basement to be kept closed, thereby eliminating wet outside air under the first floor and around the return duct and return plenum.

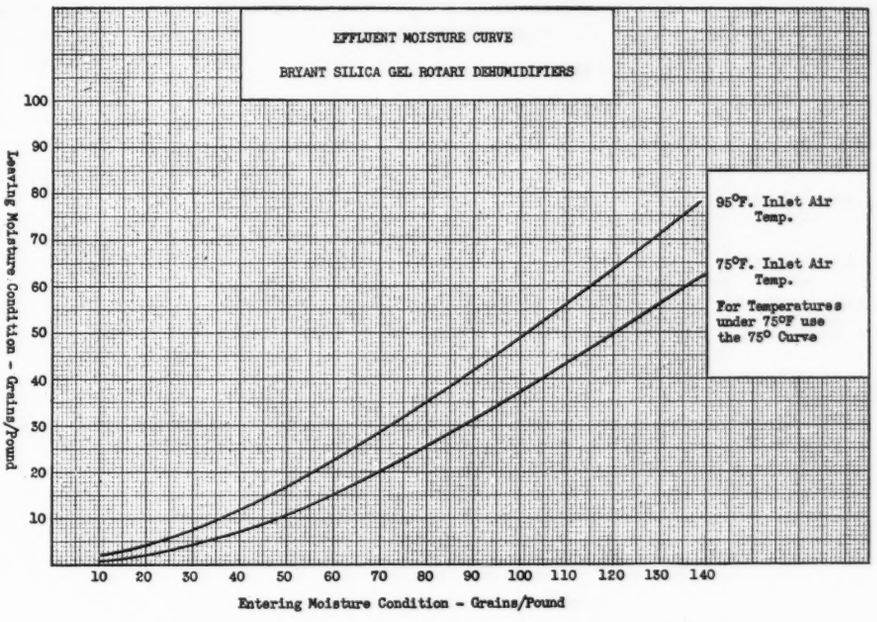

FIG. 3. Effluent moisture curve for silica gel rotary dehumidifiers.

A detailed description of the rotary type is as follows (See Figs. 4 and 5) The silica gel adsorbent material is carried in a cylindrical basket made up of two concentric cylinders of wire mesh screen. A cross-section of this basket is illustrated in schematic diagram above. The thickness of the silica gel bed in direction of air flow is approximately ¾ in.

The gel container, or "drum," is supported on two horizontal shafts (S), which are in turn supported by ballbearings on each end attached to the frame of the rotary type machine.

The two supporting shafts are driven through a chain and sprocket drive. The motive power to drive the chain is taken from the fan shaft through a belted drive and gear reduction unit. The 5R drum rotates at the rate of approximately one revolution in nine minutes, and the 8R, 14R and 29R units one revolution in seven minutes.

The machine is separated into two compartments by dividing seals located on the inside and outside of the drum. The portion of the drum in the right hand compartment is drying air, while simultaneously the portion of the drum in the left hand compartment is being reconditioned.

As a particle of silica gel moves from Z to X, it adsorbs more and more water vapor. "Saturation" having been attained when it gets to X, the silica gel then moves into the activation or heated air compartment where the water vapor previously adsorbed is to be driven off.

As the silica gel moves from X to Y, it is in contact with air heated by the gas burner H. The products of combustion from this heater are mixed directly with air drawn in through the activation inlet. The resultant mixture produces a temperature of 325° to 350° entering the silica gel.

When the gel reaches Y, all the water vapor has been driven off. It then enters the segment Y-Z, where unheated air passing through it partially reduces its temperature preparatory to its reentering the adsorption compartment.

Each air stream has its own fan. The adsorption fan (D), handling the

TABLE NO. 1. STATIONARY BED TYPE DEHUMIDIFIER SPECIFICATIONS.

Unit No.	Air Capacity C.F.M.	Air Capacity Lbs. per Min.	Gas Consumption B.t.u. per Hr.	Rate Burner B.t.u. per Hr.	Power KW H.
27	2700	193	262,000	375,000	3.00
50	5000	357	525,000	750,000	5.00

TABLE NO. 2. ROTARY TYPE DEHUMIDIFIER SPECIFICATIONS.

Unit No.	Nominal Air Capacity Rating C.F.M.	Nominal Air Capacity Rating Lbs. per Min.	Gas Consumption B.t.u. per Hr.	Power K.W.H.
5R	500	37.5	65,000	0.440
8R	800	60.0	95,000*	0.800
14R	1300	97.3	145,000*	1.090
29R	2900	217.0	325,000*	2.800

*The 8R, 14R and 29R dehumidifiers are equipped with throttling control. Actual gas consumption, therefore, varies with the actual load.

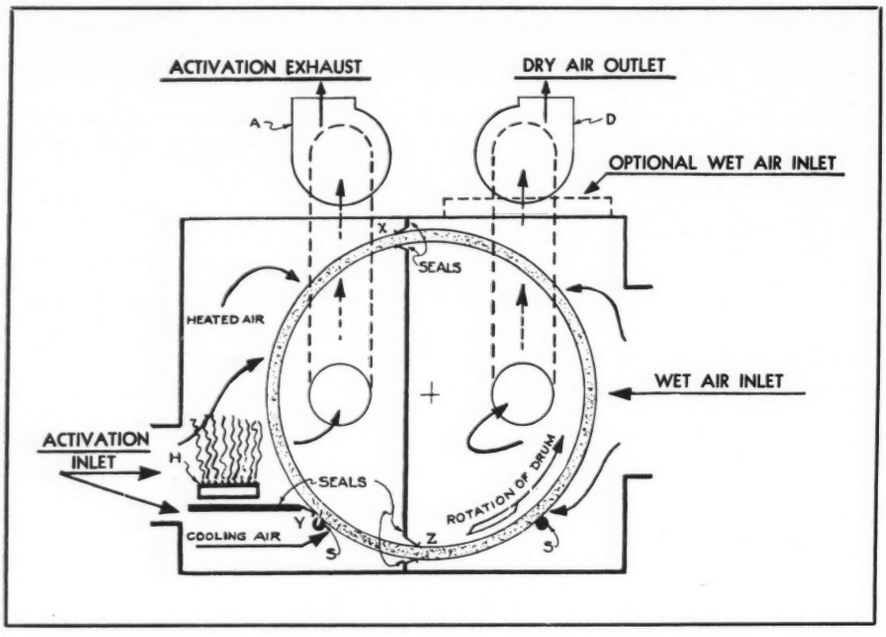

FIG. 4. Schematic diagram of Bryant rotary dehumidifier.

dried air, pulls the air through the wet air inlet, through the silica gel, and thence delivers it to the system, or conditioned space. The dried air is warm, its temperature having been elevated by reason of the latent heat of the water vapor removed by the silica gel being added to the air stream in the form of sensible heat.

The activation fan (A) handles both the hot air which has driven the moisture from the silica gel, and the cooling air. Since this air is warm and moist, it must be ducted out to the atmosphere.

The fans on the Model 5R unit are direct-connected to two ¼-hp. motors. These motors are cascaded electrically so that they start in sequence, which will permit the use of 110-volt service in the majority of cases.

The Model 8R, 14R and 29R unit fans are belt-driven by a single motor, both fans being on the same shaft.

The gas burner equipment includes a standard Bryant combination snap valve and regulator and a completely automatic thermostatic pilot. When the machine is stopped, the burner goes out through the action of the solenoid valve in combination with the gas actuated snap valve, and then the pilot goes out.

When the machine is turned "on," gas is admitted to the pilot and is lighted by spark ignition. As soon as the thermostatic element is heated the spark ignitor is shut off and the burner is then ignited from the pilot.

Throttling control has been applied to the 8R, 14R and 29R units. A temperature controller mounted inside the gel drum in the activation outlet air stream regulates the gas input to the dehumidifier in proportion to the moisture load on the machine.

Under normal operation, the static pressure of the adsorption air stream inside the drum is approximately 0.2-in. water gage greater than the pressure of the activation air stream. Thus, any leakage through the seals goes from the adsorption air stream to the activation air stream. If the unit is connected to a system or equipment, the resistance of which alters this pressure differential so that the leakage direction would become reversed, the gas is automatically shut off by means of a pressure differential switch connected to the two drum compartments. Because of this, it is important that the unit be installed so that the suction pressure wihin the adsorption compartment of the drum is not increased over 0.15-in. w.g.

Similarly, there should be no restrictions in the activation exhaust duct. Because this normal pressure differential exists between the adsorption and activation portions of the drum; a small amount of air may be lost from the system as leakage across the center partition into the activation side. It is therefore necessary to calculate the moisture load of the system with at least 5% of the capacity of the dehumidifier as outside air positively introduced into the system. This applies particularly to low humidity industrial applications.

Dry Air Cooler: Another item of equipment is the dry air cooler, which removes sensible heat from the dry air and is thus one means of reducing air temperature. It is essentially a finned tube type of heat absorber, with the air to be cooled passing over and through the outside surfaces of the finned tubes and giving up its heat to the cooling water that flows inside the tubes. The capacity and use of such coolers are limited by the available supply and temperature of cooling water.

Bryant Resaturation Coolers: These have been designed primarily for use with Bryant Silica Gel Rotary Dehumidifiers and standard dry air coolers. They operate on the principle of reducing air temperature by evaporating water into a dry air stream produced by the dehumidifier. Specifications are as follows:

Model No.	*List Price*	*Capacity C.F.M.*	*Resistance Inches Water*	*Power Watts*
5	$70.00	500	.05	50
8	90.00	800	.05	50
14	110.00	1300	.05	50

Resaturation Coolers, when installed with the proper size dehumidifier and dry air cooler can be successfully applied to take care of the cooling load on many applications in localities where the peak water temperatures are between 65°F. and 80°F. Usually where the water temperature is below 65°F. a more economical installation may be made with conventional cooling coils for cooling and the use of a smaller dehumidifier with capacity to remove only the moisture load.

Resaturation Cooler capacity charts and the method of applying these are contained on the following pages.

Construction and Operation: The Resaturation Cooler consists essentially of a compact sheet steel housing which contains a cylindrical galvanized screen drum. The bottom of the screen is immersed in a water sump. Dry air from the Dehumidifier passes first through a Dry Air Cooler where its temperature is lowered to within a few degrees of the water temperature. The air is then directed through the Resaturation Cooler. If the thermostat in the conditioned space indicates that cooling is desired it automatically starts a small electric motor which slowly rotates the resaturation cooler screen. The surface of the screen is wetted in passing through the water sump. This places a large evaporating area in direct contact with the dry air stream. Evaporation of water from the screen produces additional cooling. The evaporated water is automatically replaced by a water feed which maintains a constant level in the sump.

Flow diagrams of typical installations: The flow diagrams (Figs. 6, 7, 8, 9) show four different methods of using Dehumidifiers with supplementary cooling equipment. There are many variations of these arrangements that may be used; the ingenuity of the engineer together with physical requirements for any particular installation usually dictates the selection of the most practical arrangement.

All of the diagrams herein illustrated show a dry air cooler immediately following the Dehumidifier. This cooler is the actual heat-dissipating element in the system. The Dehumidifier changes the latent heat of the water vapor removed into sensible heat, which appears in the dry air as elevated temperature. The dry air cooler, therefore, is the component of the system that actually removes the latent heat, which the silica gel has transferred into sensible heat.

This cooler may be eliminated on industrial applications where high temperatures are allowable to accelerate the drying rate, and on certain other installations where the main cooler is sized large enough to remove the heat of the dry air plus the internal sensible heat. The latter arrangement should be used only where the cooling is being done with cheap cold water, and where the proportion of air being treated by the Dehumidifier is very small in relation to the total circulation.

Fig. 6 is a diagram particularly adapted to residential work where the temperature of the cooling water is too high to effect the necessary sensible cooling by placing a main cooler in the circulating air stream. In this case a quantity of air much in excess of the amount required to control the humidity is dried; its heat is then dissipated in the dry air cooler, and it is then passed through a resaturating spray, which lowers the dry bulb temperature of the dry air adiabatically.

Note that in this diagram no resistance is added to the winter circulating system.

Fig. 7 illustrates the arrangement having the widest application. Here the Dehumidifier dries a mixture of fresh and recirculated air; the dry air is cooled in the dry air cooler, and enters the circulating system. The sensible cooling is accomplished by the main cooler, which may be either a direct expansion coil, a refrigerated water coil, or a coil using cold tap or well water. If cold tap or well water is available, this water may be used over again in the dry air cooler as shown in the diagram. If a direct expansion or refrigerated water coil is used for the main cooler, it is necessary to supply the dry air cooler with either tap water or water from a cooling tower.

Fig. 8 shows an arrangement which may be very economical for high latent applications (theatres, restaurants, etc.) when cold water is available. The main cooler in this case is removing the latent heat of the outside air as well as reducing its dry bulb temperature, and the Dehumidifier removes the internal latent heat. In some cases, the sensible heat load may be such that an additional cooler using water direct from the well must be installed immediately following the dry air cooler.

Fig. 9 illustrates an arrangement wherein the Dehumidifier is removing the latent heat of the outside air plus a portion of the internal latent heat. The direct expansion coil in the recirculated air stream removes all of the internal sensible heat, the sensible heat of the dry air leaving the dry air cooler, and the balance of the internal latent heat. A fixed by-pass is sometimes required around the direct expansion coil to increase the total air circulation. This system, when the tonnage of the Dehumidifier and direct expansion coil is properly proportioned, will give independent control of humidity and temperature because injection of a constant quantity of warm dry air into the system prevents the internal latent heat from building up faster than internal sensible heat.

The Dehumidifiers deliver a constant supply of dry air when in operation, and turn on and off automatically when under the control of a humidistat. The moisture content of the dry air is constant for any given inlet moisture condition.

Typical Installation: The Bryant Dehumidifier is particularly valuable in the industrial air conditioning field. This is true for two reasons—first, because such low humidities or dew points can be reached economically and second, because the humidity can be controlled very exactly, even at the lower ranges.

Industrial air conditioning applications logically divide themselves into two general classes:

A. Humidity control in manufacturing rooms or storage rooms.

B. The maintenance of low humidities in drying chambers or ovens where moisture is to be extracted from a product.

SALES POTENTIALITIES

In the first paragraphs of this article it was stated that the applications of gas-filled air-conditioning were practically innumerable. The following are examples of gas-fired air-conditioning installations in the imaginary city of Summerville.

1. *A Shoe Factory:* Mr. Jones, the production manager of a certain shoe

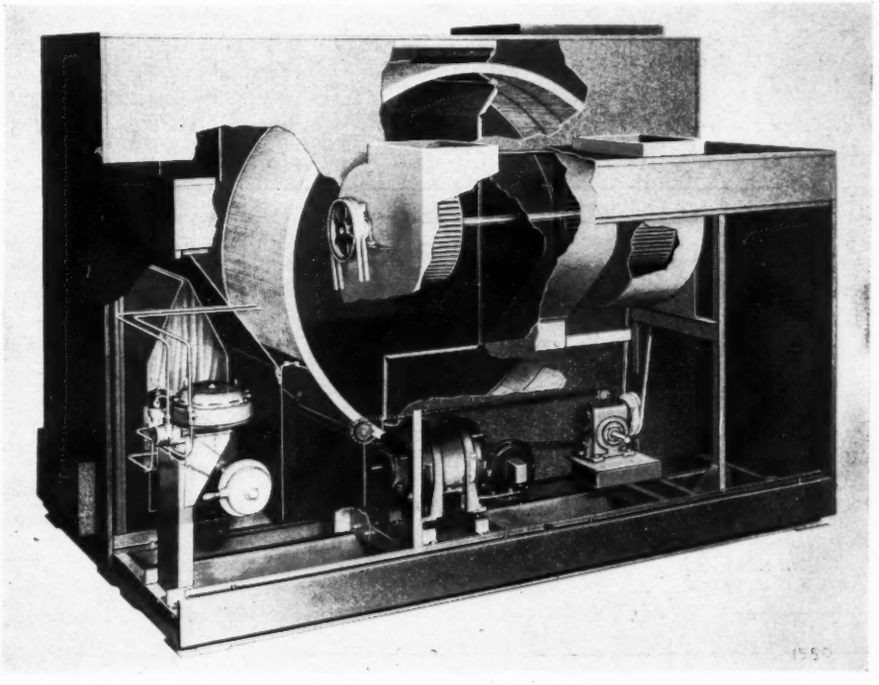

FIG. 5. Cut-away view of Bryant rotary dehumidifier.

factory found that during humid weather it was necessary for him to shut down his plant because the shoes formed over the last the day before were not yet dry and, of course, the shoes could not be completed. It was suggested by Bill Taylor, air conditioning engineer of the local gas utility, that a small drying chamber for these shoes at this stage of the process might be built, thus maintaining the air surrounding the shoes at a moisture level where drying could be carried on at a constant rate. The manager thought the suggested installation might be well worth while, and accordingly, Bill gathered all the information he thought was pertinent to the problem such as the amount of moisture to be removed from each shoe, maximum production facilities, and with the engineering contractor worked out the details of the job, and a proposal was submitted.

As both Bill and Mr. Jones had anticipated, drying of the shoes was no longer subject to the outdoor weather conditions and Mr. Jones had the following results to justify the first cost and operating cost of the installation:

1. Production was stepped up and followed a definite schedule.
2. Shoes were completed the same day they were formed on the lasts.
3. The wooden last inventory was greatly reduced.
4. Shoes were uniform and in better condition for the final operations.
5. Shipping promises could be kept, improving customers goodwill.

Needless to say Bill Taylor had done another good job and what is more important had added an additional gas load to his company's lines, a summer gas load.

2. *A Printing Plant:* One of the principal jobs of Summerville's largest industry, a printing plant, was the production of labels printed in four colors. Obviously all these colors must match or register perfectly, without overlapping. As paper is hygroscopic, it picks up moisture and changes size with variations in the humidity of the air surrounding the paper. To a lesser degree the paper also changes with variations in temperature. Such variations in air conditions during and between color runs would cause the colors to print out of register. Small variations could be corrected in some measure by shutting down the presses and adjusting the printing plate or the paper in relation to the plate, but with wide variations in humidity and temperature, the presses would have to be shut down completely.

An air conditioning system would solve this problem as well as several problems such as control over the amount of ink used. But it would have to be a system in which the temperature and humidity were both controlled.

Bill Taylor, the engineer, explained the operation of the dehumidifier and pointed out that this unit would take care of the moisture load independent of the cooling load, and would be controlled directly by the room humidistat. The cooling would be handled and controlled in the same system but by a separate means.

The problem was passed over to the engineering contractor and the proposal was submitted. Joe Duncan, the plant superintendent had no doubts about such a system eliminating his biggest production problem; but, could its cost be justified Would the elimination of the shutdowns, smoothing out of production, increased efficiency of his workmen, and the improved product show that the installation would pay dividends?

Fortunately, as in most industrial jobs, many of the contributing factors are tangible and the costs and savings can be predicted fairly accurately. Analysis showed a saving, and after the installation was made, it was found to have reduced the press shutdowns, including those due to changes in runs, and mechanical breakdowns from 13% to 3%. The savings enabled the management to write off the total cost of the installation in three years.

3. *A Restaurant:* Mr. Black, the manager of a local restaurant, decided to go into the matter of gas fired air conditioning as carefully as possible, considering all the equipment and types of systems available. The local engineer had contacted Mr. Black many times, so it was natural for Mr. Black to discuss his air conditioning problems with him. The engineer had explained how silica gel had been used over at the printing plant and how successful it was and although this was an industrial problem, wasn't his problem similar in many respects?

He showed Mr. Black that a system could be designed to maintain a definite inside temperature and humidity when the outside conditions were at the generally accepted maximum and when his dining room was filled with guests. He showed him that the cooling load in the space came from heat transmitted through the walls and windows, from sun effect, by infiltration, and from heat given off by the guests in the room, lights, etc. Moisture was also given off by the people, by direct infiltration of humid outside air, and by moisture transmission through walls.

Wasn't it reasonable that the cooling required would vary widely through-

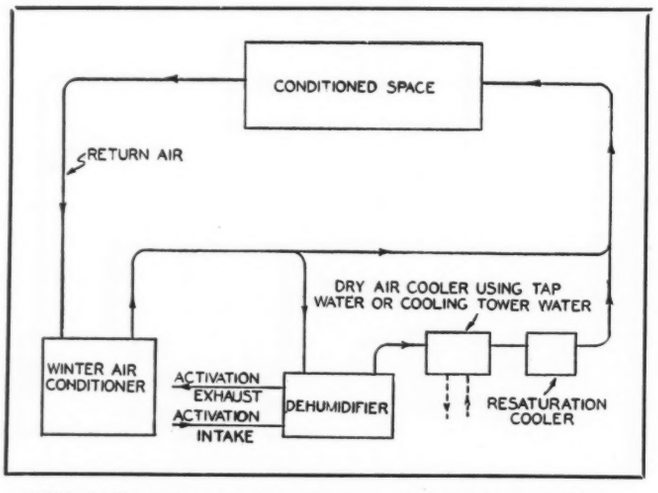

FIG. 6. Typical system flow diagram of dehumidifier installed in residence. (Tap water above 65° F.).

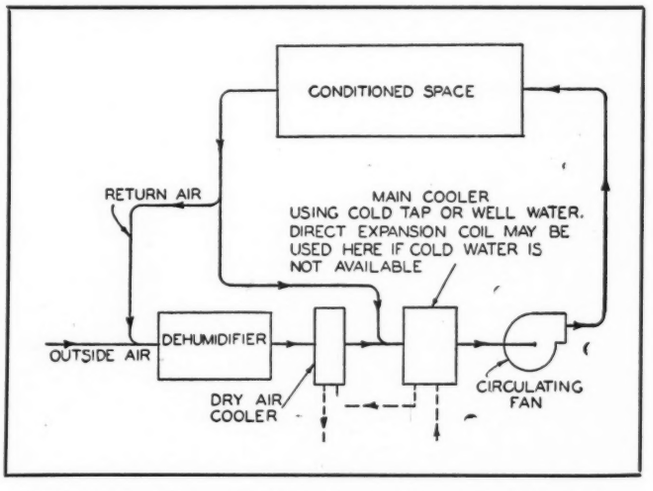
CONDITIONED SPACE
RETURN AIR
MAIN COOLER USING COLD TAP OR WELL WATER. DIRECT EXPANSION COIL MAY BE USED HERE IF COLD WATER IS NOT AVAILABLE
OUTSIDE AIR
DEHUMIDIFIER
DRY AIR COOLER
CIRCULATING FAN

FIG. 7. Typical system flow diagram for commercial and industrial installation. (Or residential with cold water.)

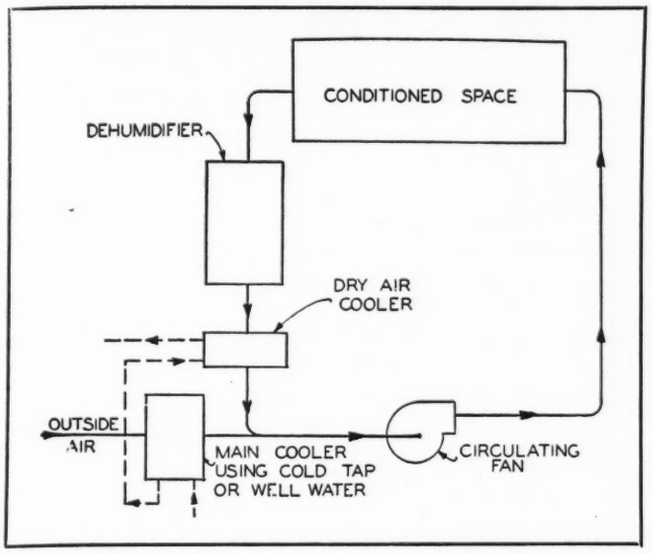

FIG. 8. Typical system flow diagram for commercial installation with high latent heat load (cold tap or well water cooling).

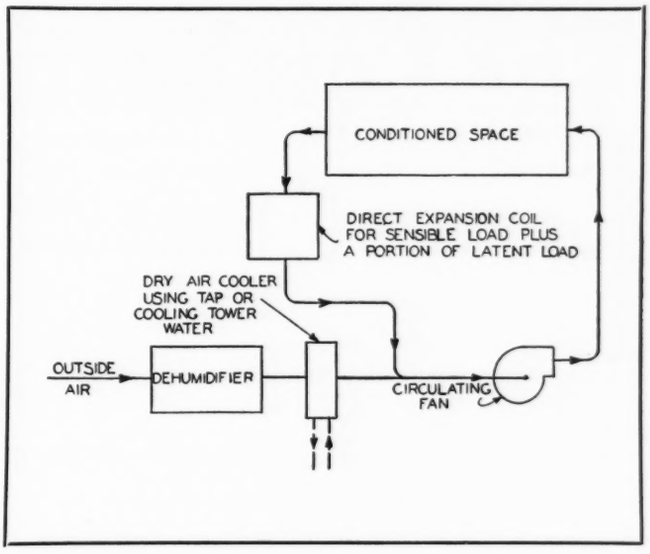
CONDITIONED SPACE
DIRECT EXPANSION COIL FOR SENSIBLE LOAD PLUS A PORTION OF LATENT LOAD
DRY AIR COOLER USING TAP OR COOLING TOWER WATER
OUTSIDE AIR
DEHUMIDIFIER
CIRCULATING FAN

FIG. 9. Typical system flow diagram for a commercial installation (refrigeration cooling).

out the conditioning season and that the moisture load would also vary but not necessarily in proportion?

Perhaps it would be a cloudy humid day outside, there would be no sun effect and heat transmission through the walls would be smaller. The cooling load may only be half the maximum load, but the moisture load would be at its peak. Under these conditions, would it not be desirable to have one piece of equipment which would do nothing more than take care of the moisture load and another piece of equipment to take care of the cooling load, each doing the job they were intended to do?

With a gas fired Bryant Silica Gel Dehumidifier in conjunction with an independent cooling means, an optimum combination of humidity and temperature could be maintained at all times, regardless of the load variations. In other words, 100% flexibility of operation would be obtained.

This was what Mr. Black was after. He realized the possibilities which such a system offered. Condensation, adsorption, recirculation, dewpoint, were just words! But temperature and humidity and independent control over either and flexibility were things he understood. He had recognized these as problems in air conditioned theatres, stores and shops where he had been a customer.

4. *A Residence:* Doc Thompson had been asking about a simple air-conditioning system for his home. Why not put in an oversize Silica Gel Dehumidifier — one large enough to take care of both the normal moisture load in the space and also capable of handling the cooling load.

Bill Taylor found that Bryant had a resaturation cooler designed to do just that job. A simple evaporating chamber consisting of a cylindrical wire mesh cylinder through which the dry air is passed. This cylinder is rotated slowly by a small motor, and as it rotates, is continually wetted by passing the bottom section through a water reservoir. The resaturation cooler is controlled by starting or stopping the drive motor.

Bill calculated the moisture and cooling load of Doc Thompson's home and found that with an 800 C.F.M. Silica Gel Dehumidifier (No. 8-R), a Dry Air Cooler, in combination with a No. 8 Bryant Resaturation Cooler, would even on the hottest or most humid day deliver 800 C.F.M. of 63° air and at a moisture content which would keep the house below 45% relative humidity.

Following his experience with Mr. Jones, the production manager of the shoe factory, Bill began to wonder how many other manufacturers in Summerville had similar problems, processes which could not be carried out or were handicapped during humid weather. He discovered:

1. *Pharmaceutical Plant:* It was found that this plant had difficulty forming tablets and pills during humid weather. They could not properly sugar coat the pills. Effervescent salt tablet manufacture was suspended.

2. *Instrument and Gauge Plant:* This plant, working on army and navy instruments, had costly rejections because of their inability to accurately calibrate these devices under varying atmospheric conditions.

3. *A Candy Manufacturer:* The candy manufacturer who had been using refrigeration for years recognized the need for humidity control throughout the steps in the manufacture of his candies and chocolates and their storage before shipment.

4. *Lacquered Metallic Art Figures Factory:* It was noticed in this small plant that during humid weather the lacquered surface became spotty and cloudy. It was found that the lacquer solvent evaporated rapidly and cooled the metal surface down below the dewpoint of the surrounding air, with the result the moisture condensed on the surface.

5. *A Showcase Manufacturer:* The local showcase manufacturer eliminated his summer headache by carrying out the glazing and sealing of the double and triple front display windows in a low humidity room. These showcases did not fog between the glass windows.

It can be readily seen from our brief visit in Summerville that almost every manufacturer, large or small, has a humidity problem and that the application of gas-fired air-conditioning equipment is the most logical solution of such problems of moisture and temperature control. It might be added that the engineer working in this field must derive a great deal of personal satisfaction in conceiving an idea, and in watching that idea take concrete form to perform a necessary and welcome service.

(With this article by Mr. Heisterkamp, GAS presents the first in a series of six articles on gas-fired air-conditioning. The second will appear in the April issue.)

The Combustion Gas Turbine

By PAUL SIDLER

Resident Engineer, Brown, Boveri & Company, Baden, Switzerland

• **THE COMBUSTION GAS Turbine — a machine for direct conversion of fuel heat energy into rotary motion — has excited the interest of scientists and engineers for the past century and a half. Practical details have now been developed in Switzerland, so that numerous installations are in operation in that country and in the United States. The operating principles as applied to a prime mover for the direct generation of electricity are described in the following excerpts from a paper, "The Combustion Gas Turbine — A Novel Prime Mover," presented by PAUL SIDLER, resident engineer, Brown, Boveri & Co., of Baden, Switzerland, before the Third Mid-West Power Conference, sponsored by the Armour Institute of Technology in Chicago, March 20, 1940. — (Abstract by G A S.)**

ALTHOUGH during the last two years a great deal has been written and spoken about the new development of a gas turbine, the basic conception of a prime mover which would directly translate the heat energy of a fuel into rotary motion originated about 150 years ago and has occupied hundreds of engineers since that time.

This earlier work provided the three fundamental requirements for a successful combustion gas turbine:

1. An accurate knowledge of thermodynamics of combustion gas.

2. The materials able to withstand the physical and chemical action of the combustion gas with a temperature of 1000-1100° F.

3. An air compressor with sufficiently high adiabatic efficiency.

Equipped with these tools it became possible successfully to approach large air delivery problems, as encountered in chemical processes.

It was then a relatively small further step to the gas turbine built for power production exclusively. The diagram of a gas turbine plant in its simplest form is shown in Fig. 1.

The air is taken into the compressor from the atmosphere and compressed in about 24 stages to about 60 lbs. sq. in. gage. The temperature of the air at the compressor discharge is about 360-380° F., assuming an inlet temperature of 60° F. It then enters the combustion chamber, where it is subdivided. A smaller part (about 25%) goes through the burner and actually participates in the combustion of the liquid or gaseous fuel. The greater part of the air is by-passed around the burner and serves to cool it. Its main purpose is, however, to dilute the hot combustion gases and to reduce the temperature of the gas-air mixture to the present limit of 1000° F., for which the inlet elements of the turbine can be built. Short-time peak temperatures up to 1120° F. are permissible.

The pressure drop through the combustion chamber is about 1 to 1½ lbs. sq. in., so that the gas mixture enters the turbine with a pressure of 58½-59 lbs. gage. It is expanded to atmosphere through the six or seven reaction stages and has an exit temperature of about 600-615° F.

In the simplest layout the gas is then discharged to the open. It becomes clear immediately that it is possible to utilize the heat contained in the exhaust gas, at the expense of a small back-pressure. The most obvious arrangement is to use the exhaust gas for preheating the combustion air between the compressor discharge and the inlet of the combustion chamber.

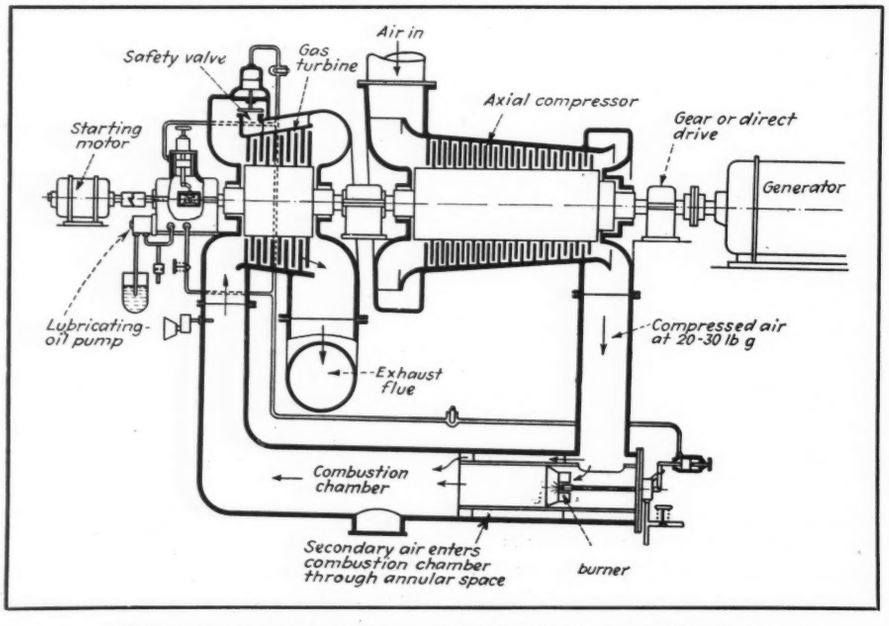

FIG. 1. Diagram of combustion gas turbine electric generating plant.

Experience has shown that if the product of the adiabatic efficiencies of the gas turbine and of the compressor is 53%, the power surplus is exactly zero. This means that the gas turbines will develop just enough energy to drive the compressor. Assuming a machine of practical size, the adiabatic efficiency of the gas turbine is 86%, that of the axial compressor 85%. Their product is thus about 73% and the corresponding over-all thermal efficiency of the turbo-compressor set is about 17%.

This result has actually been confirmed in tests and is based on an arrangement without exhaust heat recovery. If an air preheater of reasonable dimensions is added, it is possible to improve the thermal efficiency to about 21%.

While there is no immediate prospect for operating gas turbines safely with an inlet temperature of 1500° F., the temperature of 1200° F., perhaps even a little higher, is definitely in sight. Materials which will withstand this temperature continuously and which can still be machined to produce nozzles and blading, are being developed now and should be commercially available shortly.

A higher inlet temperature to the turbine has two-fold advantages. The power developed in the turbine is higher and also the amount of diluting

air necessary to cool the combustion gas to the admissible limit at the turbine inlet becomes smaller. For both reasons the surplus — or useful — energy is increased.

Aside from the possibility of using materials of higher heat-resistance, or higher creep strength, research and development work is conducted towards suitable methods of cooling the turbine blades. Hollow blades with air cooling or arrangements by which the blade surface is enveloped in a boundary layer of cooling air, have been studied and are in experimental operation.

The efficiency of the gas turbine power unit with directly driven generator drops rapidly at partial loads. If it is 17% at full load, it will only be 15% at three-quarter load and 12% at half load. This is due to the fact that the speed of the set is dictated by the electric frequency, whereas changing load would require a variable speed on the compressor to obtain best possible efficiencies. This situation can therefore be improved by providing two gas turbines with common combustion chamber, one driving the generator at constant speed and the other driving the compressor at the best speed for economical operation. If this two-shaft arrangement is combined with a heat exchanger of moderate size (say 5000 sq. ft. heating surface), the thermal efficiencies at full, three-quarter and half load will be 22%, 23%, and 22% respectively.

For gas turbines with a net output of 6000-9000 kw., there is another interesting possibility for improving the over-all thermal efficiency, by subdivision into two pressure stages. This naturally requires two gas turbine-driven compressor sets and two combustion chambers. The generator is coupled to the low-pressure set. With this arrangement it is possible to obtain an over-all thermal efficiency of about 21% without any air preheating and about 24% with an air preheater of moderate size.

The gas turbine is so far only available for oil or gas fuel. An experimental plant burning pulverized coal has been in operation for several months and shows definite promise.

With the thermal efficiencies obtainable at present, it is clear that the gas turbine is not as yet very interesting for the average central station and base-load service. For stand-by and peak-load applications its rapid starting ability should be valuable.

One of its major advantages is the absence of any water for heat transmission or cooling purposes, except for the small quantity required to cool the lubricating oil. If necessary the oil could also be cooled by air draft. This feature should make gas turbines particularly interesting for desert country where water is scarce and where often fuel oil or natural gas are available in abundance and at low cost.

The absence of water again recommends the gas turbine as main propulsion machinery for movable power plants, ships and locomotives. In these fields the standard power plants now in use have an efficiency considerably below that already achieved by the present gas turbine design, without waiting for further improvements.

Gas Engine Waste Heat

THIS DISCUSSION of gas engine waste heat utilization herewith published is an excerpt from the Committee Report of the American Gas Association's Gas Engine Power Committee. The report was presented before the Association's Annual Convention held in Atlantic City, October 7-10, 1940. Chairman of the Gas Engine Power Committee is D. W. REEVES, Oklahoma Natural Gas Co., Tulsa, Okla. — (Abstract by G A S).

EARLY in 1939, a comparatively new method of gas engine cooling was tried out in the United States, namely the "high temperature" or "steam cooling" principle. Because of the great possibilities along the line of waste heat recovery coincidental to this method of engine operation, the natural gas power industry has been keenly interested in its development and ultimate perfection. The 1939 report of the Gas Engine Power Committee contains a complete description of this method.

Owing to the fact that the cooling of gas engines at temperatures in excess of 212° F. represents a rather revolutionary move in the dissipation of waste heat from engine water jackets, it has been quite natural for the industry as a whole to proceed rather conservatively, testing and observing the results obtained before accepting the method as safe for authoritative recommendation.

Forty-six natural gas engines, varying in size from 40 to 250 hp., have been observed over periods of from 12 to 18 months of operation at temperatures varying between 215° and 230° F. These engines have been periodically inspected during operation and have been torn down for detailed micrometer inspection for mechanical wear. Dynamometer tests have been conducted on engines equipped with conventional (low temperature or 160° F.) cooling units, then rechecked after being cooled at temperatures above 212° F., the results have been as follows:

1. Dependability (continuity of service) has been as good, in all cases, and in many instances better, than that of engines operating at temperatures below 212° F.

2. Lubricating oil consumption in engines operating with high temperature cooling has been no greater than in engines cooled at lower temperatures.

3. Cylinder wear in engines cooled above 212° F. has been normal and, in some instances, phenomenally low.

4. Piston rings in all engines operating above 212° F. were entirely free and clean when inspected. (One exception was an engine operating in a dairy close to a beet sugar pulp storage that had taken some of the fine pulp in through the crank-case breather, forming "molasses" in the oil.)

5. Engine head gaskets of standard material have held perfectly in all cases.

6. Bearings inspected were in excellent condition, wear being normal or below normal.

7. Condensation (accumulation of water in oil sump) is entirely eliminated when engine jacket water temperatures are maintained above 212° F.

8. Dynamometer tests with and without high temperature cooling show a slight increase in engine horsepower under full load conditions with the same quantity of fuel, indicating possible reduction in "oil drag" at higher temperatures.

The foregoing results are of vital importance to the natural gas power industry. It is now possible to safely advocate the use of high-temperature cooling wherever waste heat may be utilized to advantage in conjunction with the operation of a natural gas engine.

The advantages of waste heat recovery obtainable through use of this method of engine cooling may be itemized as follows:

1. Ability to recover approximately 50% of the heat value of the fuel supplied to the gas engine (in addition to

TABLE NO. 1. HEAT RECOVERABLE PER BRAKE HORSE POWER. (ACTUAL LOAD) PER HOUR

	Actual Engine Load in Per Cent of Rated Capacity		
	100	*75*	*50*
B.t.u. recoverable per brake horsepower hour	5,000	5,700	7,300
Pounds of steam at 5 lbs. per square inch gage from water at 70° F.	4.15	4.74	6.07
Gallons water at 180° F. from water at 70° F.	5.46	6.22	7.96

Note: Full load is based on 70 lbs. per sq. in. B.M.E.P.

the 25% converted into useful work) at temperatures sufficiently high as to be practicably useable.

2. Recovery of the waste heat in the engine jacket water and exhaust gases may be accomplished without upsetting the balance in the engine cooling system or affecting the temperature differential in the engine itself, regardless of variation in operating conditions.

3. Fluctuation in external heat demand or in engine load conditions may be automatically compensated for without additional attention or adjustment by plant operator.

The quantity of heat obtainable under various engine load factors utilizing the heat from the engine jacket water and exhaust gases is shown in Table No. 1.

It is readily apparent that through the use of a simple, dependable and automatic method of waste heat recovery, the field of application for natural gas engines is infinitely broadened. By means of the greatly increased over-all thermal efficiency of the natural gas power unit thus obtained, it is possible to compete with other sources of power where, by reason of poor load factor, the differential in operating costs on a strictly power basis has been insufficient to retire the heavier investment required for gas engines.

An industrial example of the foregoing situation is the average large laundry where power requirements are relatively high and of comparatively short duration, but where great quantities of hot water and steam are essential. In most such cases, accumulators (insulated storage) will be required to accumulate the heat generated in the engines during the periods of low heat demand and high power requirements if the two do not coincide. Existing boilers or water heaters would be used merely to supplement the heat developed in the engines which would usually be insufficient for the entire plant requirement.

One of the large wineries in Southern California has recently installed a 150-hp. natural gas engine, equipped for high temperature cooling, for driving an ammonia compressor. The compressor is used for refrigeration, chilling of the wine during one of the stages of manufacture. During another stage in the manufacture of the wine it must be pasteurized, requiring heat at approximately 225° F. The waste heat from the engine, in the form of steam under pressure of 5 lbs. per sq. in. gage, is discharged into the pasteurizer and returned to the engine cooling system.

To supplement the engine waste heat system, a 25-hp. boiler was installed, automatically controlled, to provide the required heat if and when the refrigeration load on the engine is insufficient to generate heat in the quantities demanded by the pasteurizer.

An auxiliary condenser system is included in the installation for dissipation of the heat from the engine at such times as the pasteurizer is out of service while the engine and compressor are operating.

The plant is entirely automatic, requiring no attention by plant engineers with a change in operating conditions. The engine is automatically governed for variable speed to maintain uniform refrigeration conditions at all times.

Summary

1. It is generally conceded that the high temperature method of gas engine cooling has passed the experimental stage and may safely be applied to natural gas engines of conventional design.

2. Although the volumetric efficiency of the gas engine is probably reduced somewhat by the higher jacket temperature under maximum load, this loss is apparently offset by increased mechanical efficiency through reduction of oil drag in the engine. It is therefore safe to assume the same fuel economy with high temperature cooling as with cooling at lower temperatures.

3. The advent of this method of cooling provides unlimited diversification of gas engine application where waste heat may profitably be utilized.

4. The method of high temperature cooling is theoretically simple, and mechanically dependable and foolproof when properly installed. However, there are sufficient intricate details pertaining to design and construction of the equipment required as to make it inadvisable for the average "layman" to attempt such an installation without assistance and engineering advice from men qualified by experience to render such service.

5. It must be clearly understood that the engine jacket water itself cannot be used *directly* in a waste heat recovery process but must be used indirectly or through a heat exchanger and returned to the engine cooling system.

6. The Pacific Enterprise Co. of Los Angeles has conducted an exhaustive series of experiments and tests on engines with high temperature cooling (trade name — "Vapor-Phase"), and has designed and is manufacturing units for this purpose which are adaptable to any standard four-cycle gas engine. These units, along with waste heat recovery equipment, may now be obtained from this company at a very nominal cost.

■ ■

Austin Gas Field Purchased By Michigan Consolidated

GLENN R. CHAMBERLAIN, vice president and general manager of the Michigan Consolidated Gas Co., Detroit, Mich., announced recently that his company, with approval of the securities and exchange commission, had purchased the Austin gas field, 8 miles southeast of Big Rapids, Mich.

The Taggart brothers of Big Rapids, owners of the field, will receive $825,000 for the property, he said.

Chamberlain also said plans were being considered to use the field as a storage reservoir for Texas natural gas when the present supply of the field is exhausted. Grand Rapids and Muskegon, Mich., are the largest cities supplied by the field.

■ ■

Rincon Repressuring Plant Construction Begun

Continental Oil Co. has started construction on a pressure-maintenance plant in the Rincon field in eastern Starr County, Tex., which will involve expenditure of $250,000 to $300,000. Operating control of the Rincon field was acquired recently by Continental's purchase of the W. R. Davis interest.

The Rincon plant will eventually handle gas from more than 50 completed wells and those projected in the development program. The first two units of the plant will be pushed to prompt completion. The two 800-hp. compressors in the first unit will handle 15,000,000 cu. ft. of natural gas daily.

■ ■

P.G.&E. Bond Issue Approved

The California Railroad Commission has approved the issuance of $1,250,000 worth of 3¾% first mortgage bonds, series H, due December 1, 1961, of Pacific Gas and Electric Co. The proceeds will be used to reimburse the company for capital expenditures.

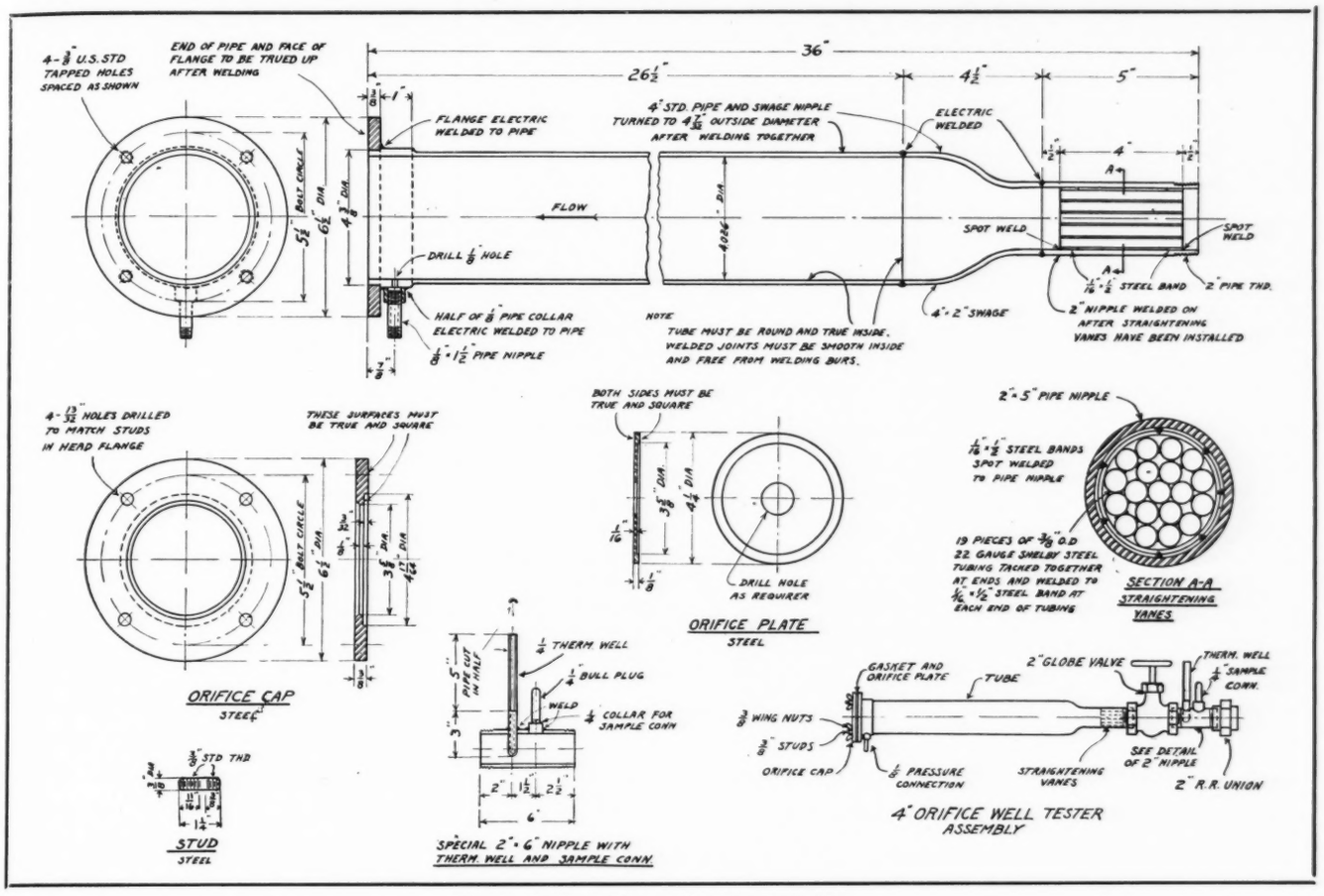
4-⅜" U.S. STD TAPPED HOLES SPACED AS SHOWN
END OF PIPE AND FACE OF FLANGE TO BE TRUED UP AFTER WELDING
36"
26½"
4½"
5"
FLANGE ELECTRIC WELDED TO PIPE
4" STD. PIPE AND SWAGE NIPPLE TURNED TO 4.026" OUTSIDE DIAMETER AFTER WELDING TOGETHER
ELECTRIC WELDED
FLOW
DRILL ⅛" HOLE
SPOT WELD
SPOT WELD
½"×⅛" STEEL BAND
2" PIPE THD.
HALF OF ⅛" PIPE COLLAR ELECTRIC WELDED TO PIPE
⅛"×1½" PIPE NIPPLE
NOTE
TUBE MUST BE ROUND AND TRUE INSIDE. WELDED JOINTS MUST BE SMOOTH INSIDE AND FREE FROM WELDING BURS.
4"×2" SWAGE
2" NIPPLE WELDED ON AFTER STRAIGHTENING VANES HAVE BEEN INSTALLED
4-13/32" HOLES DRILLED TO MATCH STUDS IN HEAD FLANGE
THESE SURFACES MUST BE TRUE AND SQUARE
ORIFICE CAP
STEEL
BOTH SIDES MUST BE TRUE AND SQUARE
DRILL HOLE AS REQUIRED
ORIFICE PLATE
STEEL
2"×5" PIPE NIPPLE
⅛"×½" STEEL BANDS SPOT WELDED TO PIPE NIPPLE
19 PIECES OF ⅜" O.D. 22 GAUGE SHELBY STEEL TUBING TACKED TOGETHER AT ENDS AND WELDED TO ½"×½" STEEL BAND AT EACH END OF TUBING
SECTION A-A STRAIGHTENING VANES
⅜" STD THD
STUD
STEEL
½" THERM. WELL
½" BULL PLUG
WELD
½" COLLAR FOR SAMPLE CONN
PIPE CUT IN HALF
SPECIAL 2"×6" NIPPLE WITH THERM. WELL AND SAMPLE CONN.
GASKET AND ORIFICE PLATE
TUBE
2" GLOBE VALVE
THERM. WELL
½" SAMPLE CONN.
⅜" WING NUTS
⅜" STUDS
ORIFICE CAP
⅛" PRESSURE CONNECTION
STRAIGHTENING VANES
SEE DETAIL OF 2" NIPPLE
2" R.R. UNION
4" ORIFICE WELL TESTER ASSEMBLY

FIG. 1. A 4-in. orifice well tester assembly.

An Orifice Well Tester

THE use of orifice well testers for measuring gas has many industrial applications. Numerous types of orifice well testers are now in use. Only one type of well tester will be discussed, namely, one developed by Union Oil Co., which has been used with considerable success, principally for measuring gas production from small wells whose trap pressures are above atmospheric pressure.

The orifice well tester is shown in Fig. 1. It is of such size and weight as to be portable. The internal diameter of the tube or pipe directly upstream of the orifice is 4.026 in. The overall length of the apparatus is approximately 4 ft. The connection to gas line being tested is made by means of a 2-in. union. Tests upon this apparatus indicate that no further length of straight pipe upstream is required for accurate measurement. The gas being measured enters the upstream end of the apparatus, thence through a globe type of control valve, thence through straightening vanes in a 2-in. nipple, then through the main 4.026-in. pipe section, and finally passes out through a thin plate orifice at the end of the main pipe section. A thermometer well and sampling connection are installed in the 2-in. nipple directly upstream of the control valve. A complete set of orifice plates of the disk type having sharp-edged circular orifices from ⅛ in. to 3 in. diameter is furnished with each well tester. The orifice plate being used is placed into a plate carrier. The carrier with the plate is then fastened onto the flange at the end of the tester by means of four hand-operated wing nuts screwed onto studs embedded in the tester flange. This permits ease and speed of plate changing as well as perfect plate centering.

The pressure tap is installed in the side of the tester at ⅞ in. from end of the flange. A recording spring type differential gage having a range of from 0 to 60 in. of water is used to record the static pressure upstream of the orifice, which in reality is the differential pressure across the orifice, downstream pressure being atmospheric.

Coefficients for this apparatus were determined from actual tests run at Dominguez in September, 1936, by first running the gas through a standard 4-in. flange tap connected orifice meter for the high flow rates and thence through the well tester. For low flow rates the gas was first passed through the orifice meter and then through a 1½-in. displacement meter and thence through the well tester.

Dry natural gas having a relatively constant gravity of .667 was used throughout these tests. The supply pressure was quite constant at slightly over 20 lbs. gage pressure. Orifice plate sizes used on the well tester dur-

• **W. L. COWAN, Union Oil Co. of California, Los Angeles, Calif., in a paper, "Measurement of Gas by Orifice Well Tester and Pitot Tubes," presented before a recent meeting of the Southern California Meter Association at Huntington Park, Calif.—(Abstract by GAS.)**

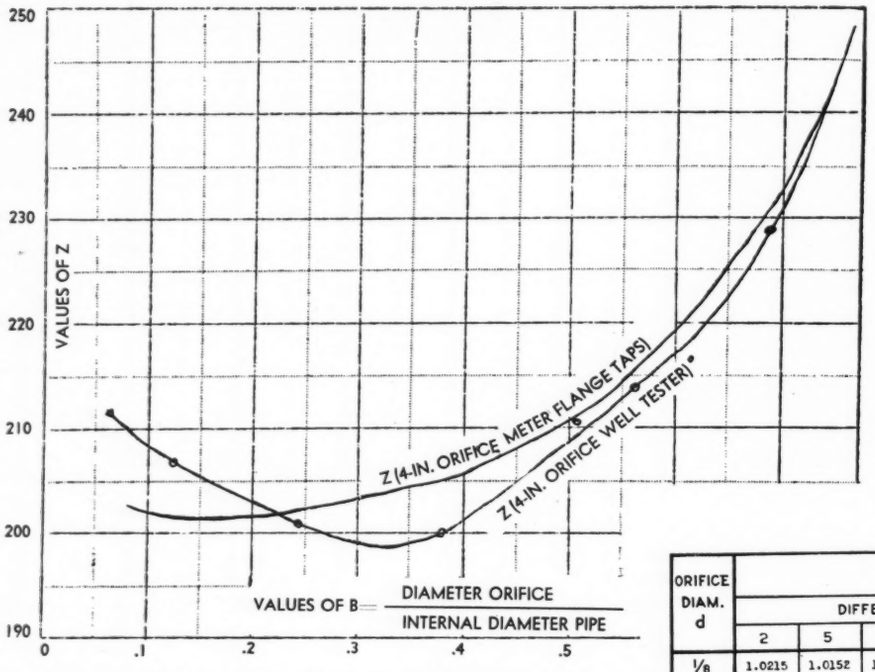

FIG. 2. Values of Z for orifice well tester and 4-in. flange tap orifice meter.

ing the tests were ¼-, ½-, 1.0-, 1.50-, 2.00-, 2.25-, 2.50-, 2.75- and 3.00-in. Each orifice was tested with the globe type control valve of the tester wide open with at least two differential rates of about 10 in. and 40 in. of water and, in some cases, an additional run at around 25 in. These same tests were then repeated with the well tester control valve only slightly opened and with the control valves off the main supply line nearly wide open. Temperatures were taken three times during each run at the orifice meter, thermometer well in the well tester, and in the flow stream in the orifice at the outlet of the well tester. The maximum range of the tester is about 1700 std. M c.f. per day.

The flow as measured through the orifice meter was used as the basis of comparison for all orifices over 0.500 in. in diameter.

Determination of coefficients of discharge for the orifice well tester were made as follows: As the orifice well tester approximates a standard flange tap orifice meter hook-up, for the low differential rates which were carried during the tests and for the range of service which it was to be used, that is a maximum differential pressure of 50 in. of water, the standard type of orifice meter flange tap formula was used as per C.N.G.A. Bulletin TS-353, "Tentative Standard Procedure for the Measurement of Natural Gas with Orifice Meters."

In the formula, $Z = 338.2 \times K_o$, where K_o represents the coefficient of discharge for this well tester as determined by test, and d = orifice diameter in inches.

As all of the quantities in the formula were known from test data except the value of Z for the well tester, the quantity of flow having been determined by either the standard orifice meter or the displacement meter, the values of Z for each test run were obtained.

Values of Z were then plotted against orifice to pipe diameter ratios as shown by Fig. 2, and from this curve Z values for all standard sized orifices were determined. C values, equal to Zd^2 for all standard size orifice were then computed.

Values of F_e, the expansion factor, and F_R, the Reynolds number factor, were then also computed for all standard orifices at various differential rates for an atmospheric pressure of 14.73 lbs. per sq. in. Values of $F_e \times F_R$ for each standard sized orifice were then computed.

As the downstream pressure, P_2, will always be atmospheric pressure, values of $\sqrt{P_2}$ have been worked out for the average atmospheric pressure of each of the standard C. N. G. A. elevation zones.

All of the values of C ($F_e \times F_R$) and $\sqrt{P_2}$ are shown in Fig. 3 for each standard sized orifice.

Use of the ($F_e \times F_R$) values as shown on Fig. 3 will be in error for values of P_2 other than 14.73 lbs. but except at higher altitudes this error should be slight.

ORIFICE DIAM. d	VALUES OF ($F_e \times F_R$) DIFFERENTIAL IN INCHES OF WATER								STANDARD HOURLY COEF. C
	2	5	10	15	20	30	40	50	
1/8	1.0215	1.0152	1.0139	1.0142	1.0159	1.0188	1.0229	1.0271	3.34
1/4	1.0201	1.0142	1.0133	1.0137	1.0155	1.0184	1.0225	1.0269	13.17
3/8	1.0174	1.0126	1.0121	1.0127	1.0146	1.0178	1.0220	1.0264	29.26
1/2	1.0150	1.0110	1.0111	1.0119	1.0138	1.0171	1.0215	1.0259	51.50
5/8	1.0131	1.0098	1.0102	1.0111	1.0131	1.0166	1.0208	1.0253	79.88
3/4	1.0114	1.0088	1.0094	1.0105	1.0126	1.0162	1.0205	1.0250	114.19
7/8	1.0099	1.0078	1.0088	1.0100	1.0121	1.0158	1.0202	1.0247	154.50
1	1.0088	1.0071	1.0083	1.0096	1.0118	1.0155	1.0199	1.0245	200.6
1/8	1.0080	1.0066	1.0080	1.0094	1.0116	1.0152	1.0197	1.0242	252.9
1/4	1.0073	1.0062	1.0076	1.0091	1.0113	1.0150	1.0195	1.0240	311.2
3/8	1.0070	1.0060	1.0075	1.0090	1.0112	1.0149	1.0194	1.0240	376.2
1/2	1.0069	1.0059	1.0074	1.0088	1.0109	1.0146	1.0189	1.0235	448.2
5/8	1.0069	1.0059	1.0074	1.0088	1.0109	1.0146	1.0189	1.0235	530.8
3/4	1.0070	1.0060	1.0074	1.0086	1.0108	1.0143	1.0186	1.0230	621.7
7/8	1.0074	1.0062	1.0075	1.0087	1.0109	1.0144	1.0187	1.0231	722.5
2	1.0080	1.0064	1.0076	1.0087	1.0108	1.0141	1.0183	1.0225	832.0
1/8	1.0085	1.0068	1.0077	1.0088	1.0109	1.0141	1.0181	1.0223	952.0
1/4	1.0091	1.0071	1.0079	1.0088	1.0107	1.0138	1.0176	1.0216	1079.8
3/8	1.0098	1.0074	1.0080	1.0088	1.0104	1.0134	1.0170	1.0207	1219.0
1/2	1.0105	1.0079	1.0081	1.0089	1.0105	1.0132	1.0167	1.0204	1368.8
5/8	1.0112	1.0083	1.0082	1.0088	1.0103	1.0129	1.0161	1.0195	1533.2
3/4	1.0119	1.0086	1.0084	1.0088	1.0100	1.0124	1.0153	1.0186	1730.9
7/8	1.0124	1.0089	1.0083	1.0086	1.0097	1.0117	1.0145	1.0175	1952.4
3	1.0128	1.0089	1.0082	1.0083	1.0092	1.0110	1.0134	1.0160	2187.0

VALUES OF $\sqrt{P_2}$
WHERE P_2 = ATMOSPHERIC PRESSURE IN LBS/SQ. IN. ABSOLUTE

ZONE	1	2	3	4	5	6	7
ELEV. RANGE	-200 TO 199	200 TO 599	600 TO 999	1000 TO 1399	1400 TO 1799	1800 TO 2199	2200 TO 2599
P_2	14.73	14.53	14.32	14.12	13.92	13.72	13.53
$\sqrt{P_2}$	3.838	3.812	3.784	3.758	3.731	3.704	3.678

Computation of Flow

$$Q = C \times (F_e F_R) \times \sqrt{P_2} \times (F_G \times F_T) \times \sqrt{h} = \text{STD. CU. FT. PER HOUR @ 14.73 \# \& 60°F.}$$

C = Standard hourly coefficient (Obtained from this data sheet)
F_e = Expansion Factor
F_R = Reynolds No. Factor } and ($F_e \times F_R$) (" " " " ")
$\sqrt{P_2}$ = Sq. Root of Atmospheric Pressure (Downst. Press.) (" " " " ")
F_G = Specific Gravity Factor
F_T = Temperature Factor } and ($F_G \times F_T$) (" " LKIE # 205)
$\sqrt{h}$ = Sq. Root of Inches of water Differential (" " S.C.M.A. #163)

FIG. 3. Flow coefficients and factors for 4-in. orifice well tester.

On Fig. 2 in addition to the Z values for the tester a curve has been shown of Z values for a flange tap 4-in. orifice meter. By comparison of these two curves it is seen that the Z values for the well tester do not vary at any point from the Z values of the flange tap orifice meters for all orifice sizes tested by more than 2½%.

There probably should be some difference in coefficients of discharge between orifice meters and well testers for the same size pipe due to the fact that: (a) Flow is unrestrained on downstream side of orifice on a well tester while it is restricted in a standard orifice meter hookup; (b) downstream pressure used for tester is pressure at downstream face of orifice plate while in an orifice meter the downstream pressure is at edge of pipe 1 in. downstream from face of orifice plate; (c) the design of the well tester does not conform exactly with recommended orifice meter upstream specifications.

Temperatures taken at outlet of orifice tester checked within 1° F. of temperatures taken ahead of the well tester control valve. The coefficient of discharge for the well tester remained constant for any given orifice regardless of the degree of opening or pressure drop, up to about 20 lbs. carried over the tester control valve. Test results were quite consistent particularly for orifice sizes above ½ in.

The coefficients presented in Fig. 3 are applicable only to well testers of the design and size shown in Fig. 1.

In testing wells by this method it is essential that the pressure carried on the trap or line from the well correspond to the pressures held on the well during normal flow conditions.

This type of tester could be used for calibrating displacement meters in the field. It is recommended, however, that some check tests be made on this particular design of apparatus before using them for this purpose.

■ ■

Gas Company Statistics Binder Now Available

In compliance with a number of requests, the American Gas Association has made a binder available for those receiving the "Monthly Summary of Gas Company Statistics." The binder is constructed so as to hold two years' issues of the Monthly Summary, or one year's releases of the various statistical publications, including the Summary.

The binder itself is of the post type, covered with imitation leather and stamped in gold. It was selected for its durability, application and appearance. Cost is $1.00.

■ ■

Franchise Renewed

A contract for gas for the use of the city of Coffeyville, Kan., was recently renewed with the Union Gas Co. and the Industrial Gas Co., effective June 1.

Training Courses in Natural Gas

IN THE JUNE, 1940, issue of G A S, (page 30) there appeared an abstract of a paper, "Some Training Courses Available to the Natural Gas Employe," presented by John A. Ritter, Sun Oil Co., Dallas, Texas, before the Annual Convention of the American Gas Association's Natural Gas Section held in May, 1940, at Houston. Since the publication of this abstract, G A S has received many inquiries regarding this article as well as many requests for more specific information on natural gas educational courses. Accordingly, herein is presented not only a list of courses available to employes through cooperation between the American Petroleum Institute and the Texas State Trade and Industrial Training Departments, but also information regarding the home study courses offered by the University of Kansas and Columbia University. — Editor.

"VOCATIONAL Training in Oil and Gas Production," a bulletin (No. D-2-A) issued by the American Petroleum Institute Division of Production and the Texas State Trade and Industrial Training Departments, contains full instructions for the guidance of those gas field workers and employes who are interested in further education along their line of work.

According to the leaflet, and under the arrangements made, it is possible for classes to be organized in any area where there is a sufficient number of interested workers. The educational material is developed and validated by the American Petroleum Institute, and arrangements for instruction and classes are usually made by application to the local superintendent of schools in the individual states.

Among the already-prepared courses offered are the following which are particularly valuable to those in the natural gas industry:

BASIC COURSES

B-1, Grade Review Work — Heisler. Price, 75 cents. Available through the College Book Store, Stillwater, Okla. Length of course — 48 hours.

B-2-a, Applied Mathematics (Elementary)—Martin. Price, 50 cents. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas, Austin, Texas. Length of course — 48 hours.

B-2-b, Applied Mathematics (Advanced) — Martin. Price, 60 cents. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas, Austin, Texas. Length of course — 48 hours.

B-3, Elementary Science—Heisler. Price, $1.00. Available through the College Book Store, Stillwater, Okla. Length of course—48 hours.

GENERAL COURSES

G-1, Internal Combustion Engines (Oil, Gas and Diesel) Third Edition — Cyrus-Phillips. Price, $1.00. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas, Austin, Texas. Length of course—48 hours.

G-8, Blueprint Reading and Sketching — Heisler. Available through the College Book Store, Stillwater, Okla. Length of course — 48 hours.

SPECIAL COURSES

S-1, Drilling Practices — Cyrus. Price, $1.50. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas. (First edition exhausted — in process of revision.)

S-2, Production Practices — Heisler. Price, $1.50. Available through the College Book Store, Stillwater, Okla. Length of course — 96 hours.

S-4, Natural Gas Production — Heisler. Price, $1.50. Available through the College Book Store, Stillwater, Okla. Length of course — 96 hours.

S-7, Maintenance and Repair of Mechanical Equipment—Cyrus. Price, $1.50. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas, Austin, Texas. Length of course — 48 hours.

S-8, Guide for Foremanship Training—Hightower and Others. Price, $1.00. Available through the Bureau of Industrial Teacher-Training, Division of Extension, University of Texas, Austin, Texas. Length of course — 40 to 60 hours.

In addition to the courses described above and in the June, 1940, issue of *G A S* as already mentioned, there are two correspondence courses available, one offered by the University of Kansas and the other by Columbia University, both under the auspices of the American Gas Association.

The University of Kansas course is entitled "Home Study Course in Natural Gas." It is planned primarily for those who have the equivalent of a high school education with a knowledge of elementary chemistry and physics. The cost of the course to individual members and to employes of member companies of the American Gas Association, as well as to all residents of the State of Kansas is $54.00. For all others, the fee is $72.50 payable in advance or $74.50 on a time payment plan.

Experience has shown that the course may be completed in as short a period as five months, but the large majority of students require a period extending over the greater part of two years.

Upon satisfactory completion of the work and the passing of a final examination, a certificate is issued by the Extension Division of the University. This course does not give credit toward a university degree, but it requires work equivalent to that of a course in engineering giving credit of five or six hours. Enrollments are accepted at any time.

Application blanks and detailed information will be furnished by either the University Extension Division, University of Kansas, Lawrence, Kan., or Kurwin R. Boyes, secretary, American Gas Association, 420 Lexington Ave., New York, N. Y.

The contents of the course are:

Part I. General Considerations, Origin and Production.

1. History of discovery, transportation and distribution.

2. Location of principal fields and relation to market.

3. Definition of natural gas and physical nature of gases.

4. Physics and chemistry of hydrocarbons and constituents and characteristics of natural gas.

5. Considerations, calculations and measurement of pressure and temperature.

6. Laws of gases.

7. Origin of the earth, minerals, rocks, reservoirs.

8. Origin of gas, nature of reservoirs, etc.

9. Prospecting methods and instruments.

10. Leases: ownership, legal aspects, etc.

11, 12, 13. Drilling methods and operations, bringing in and completing wells, production and operation of wells, etc.

14. Gaging capacity of wells, estimation of reserves.

15. Field measurement of gas.

Part II. Transportation, Distribution and Utilization.

1. Flow in pipes, looped lines, compressor design.

2. Pipe design, joints, welding, corrosion.

3. Surveying, installation of pipe lines, leakage.

4. Distribution: flow of gas, storage, materials and joints for mains.

5. Leakage surveys, odorization.

6. Regulators and meters.

7. Theoretical aspects of combustion and utilization.

8. Heat losses, rate of combustion, types of flames, etc.

9. Burner design and adjustment.

10. Domestic utilization, appliances, etc.

11. Industrial utilization, appliances, etc.

12. Liquefied petroleum gases, carbon black and miscellaneous.

The Columbia University Course is entitled "American Gas Practice." It is also planned primarily for those having the equivalent of a high school education including a knowledge of chemistry and physics.

The cost of the course is $60.00 when enrollment for both parts is completed at the same time. The fee for either Part I or Part II separately is $45.00. Each part consists of 12 lessons; each lesson is designed to form one month's work of 20 to 25 hours of active study. A student may send in the lesson examinations as rapidly as he can, but he is expected to complete each part in 12 months.

Upon satisfactory completion of the course, transcript of the student's record will be issued by the Registrar of the University. Although no points of credit toward an academic degree are given for this course, it is equivlent in work to a three-point course.

Enrollments are accepted at any time as each student works independently. Application blanks and detailed information will be furnished by Professor J. J. Morgan, Havenmeyer Hall, Columbia University, New York, N. Y., or by the American Gas Association.

The contents of the course are:

PART I.

1. History of manufactured gas business, characteristics and composition of fuel gases, occurrence and production of natural gas.

2. Heating of gas making apparatus, and discussion of coals.

3. Carbonization of coal and description of coal gas plant.

4. Retort carbonizing systems and coke ovens.

5. By-product recovery in coke ovens; boiler plants.

6. Blue gas theory; blue gas plants.

7. Theory of carburetion; carburetted blue gas plants.

8. Carburetion with heavy oils; pacific coast oil gas.

9. Dayton and faber oil gas processes; reforming; liquefied petroleum gases in gas production; condensing and exhausting.

10. Theory and application of scrubbing.

11. Gas conditioning; low temperature and complete gasification.

PART II.

1. Storage of gas; installation of gas mains.

2. Pipe joints; pipe corrosion and protection.

3. Services; compressors, regulators, mixing.

4. Station meters and consumers' meters.

5. Flow formulae; unaccounted-for gas; distribution design.

6. Combustion of gases.

7. Gas burners; testing appliances; change-over; ranges and water heaters.

8. Refrigerators and miscellaneous appliances; heat transfer, loss and recovery.

9. Temperature measurement: house heating; air conditioning.

10. Industrial burners and furnaces; furnace design.

11. Selection of fuel; testing and research; safety department.

12. Accounting and statistics; rates; public relations.

Federal Power Commission Issues Regulation Report

THE Federal Power Commission announced March 2 the publication of a new report entitled "State Commission Jurisdiction and Regulation of Electric and Gas Utilities" which presents the results of a survey of the nature and extent or regulation by State agencies under existing laws. The data shown in the report are presented in textular and tabular form and were submitted to the State commissions for final verification and approval prior to publication.

The power of State commissions to regulate electric and gas utilities are presented through text and tables in the report in the following sequence: Part I, Regulation of Privately Owned Electric Utilities. Part II, Regulation of Municipally Owned Electric Utilities. Part III, Regulation of Privately Owned Gas Utilities. Part IV, Regulation of Municipally Owned Gas Utilities. Part V, Regulation of Natural Gas Production. Part VI, Regulation of Other Than Electric and Gas Utilities.

The 51-page document was compiled to meet administrative needs for such information by Federal and State agencies and will be sold to the general public at 25 cents a copy by the Federal Power Commission only, to whom all orders should be addressed enclosing remittance. For convenience in ordering, the publication may be referred to as FPC S-10.

■ ■

All-Gas Talking Home Draws Wichita Crowd of 20,000

More than 20,000 persons visited the Talking Home in Wichita, Kans. while it was open to the public from January 26 to February 2. Designed and built by Guy M. Hughes, gas provided the fuel for cooking, heating, water heating and refrigeration.

The open house was unique, in that various articles in the house "talked" to visitors and even "answered" their questions. One of the centers of attraction was the streamlined all-gas equipped kitchen in which was shown the All-American Magic Chef CP gas range and the Servel gas refrigerator.

■ ■

Rate Reduction Set For Sioux Falls

A rate reduction, which will give 98% of more than 9000 customers savings on their natural gas bills ranging from 4% to 20%, was put in operation by the Sioux Falls, S. D., gas division of the General Electric and Telephone Co. on February 1.

Sioux Falls gas users will save about $22,750 over a 12-month period under the new rate, E. Clark Deane, district manager, announced. It is the second reduction in gas rates there in the last 14 months. One, made effective in December, 1939, yielded a saving of $13,000 to households and businesses.

■ ■

Santa Fe Railroad to Use More Natural Gas

The Gas Service Co. at Newton, Kans., has recently made additions to serve additional buildings of the Santa Fe Railroad. New extensions have been made to serve the Santa Fe roundhouse, blacksmith shop, and machine shop, which will add a load of about 85,000,000 cu. ft. of gas annually. This, added to the present load of the Santa Fe in Newton will make the total consumption approximately 400,000,000 cu. ft. annually.

Tennessee Soon to Have Natural Gas Service

THE Tennessee Gas and Transmission Co. expects to have natural gas ready for distribution in Tennessee and part of North Carolina late next fall, according to Curtis B. Dall, of New York, president of the company.

Previously, Wade Thompson, director and field representative of the company, had announced that the company had obtained guarantees of more than 600 billion cu. ft. of natural gas needed to supply the area involved during a 15-year period. "We are now ready to go back before the Federal Power Commission," Thompson said, "and resume the hearing on the certificate of convenience and necessity we seek. The hearing was recessed last fall until the gas supply could be guaranteed."

Thompson said the company will build a $24,000,000 high pressure line from Louisiana 800 miles northeastward through middle and east Tennessee, ending it near Asheville, N. C., if permission is granted. Arrangements are being made for 40 other towns in Tennessee besides Nashville, Knoxville and Chattanooga, to get natural gas through this line, according to Thompson.

■ ■

Louisiana-Nevada Transit Co. Holdings Change Hands

T. B. Jones, Dallas, Tex., and M. A. Mathews, Ada, Okla., have recently relinquished their interests in the Louisiana-Nevada Transit Co., a natural gas operating unit in northern Louisiana and southern Arkansas, to W. A. Delaney, of Ada, Okla., who now holds a half interest in the company. The Boettcher interests of Denver, Colo., hold the other half. Mr. Delaney is president and general manager of the Louisiana-Nevada company. Charles Boettcher is chairman, and C. K. Boettcher is vice president.

The company operates a gas line from the Cotton Valley field, La., to industrial plants at Okay and Hope, Ark., and serves domestic consumers at Okay, Fulton, Saratoga, McNab, Taylor, Bradley, Ark.

■ ■

Northern Natural Places Compressor Unit Order

Northern Natural Gas Co., Omaha, Neb., recently placed an order for four compressor units to increase the capacity of their transmission system. Delivery of the equipment is expected during the summer and installation work should be completed early in the fall. One unit of 1300 hp. will be installed at the company's station at Mullinville, Kan.; another unit of the same size will be installed at the Bushton, Kan., station. Two 800-hp. units will be installed at an entirely new plant which will be located about 15 miles north of Fremont, Neb.

■ ■

Dow Chemical Co. Awards Pipe Line Contract

Dow Chemical Co. has awarded contract to Latex Construction Co. of Houston, Tex., for the laying of 22 miles of 8-in. welded pipe line from the Anchor field, Brazoria County, Tex., to its chemical plant at Freeport, Tex. This line will supply additional gas for use of the plant to augment the supply already being obtained from the Bay City field, Matagorda County, from where a 10-in. and 8-in. line was laid last summer.

Standards Approved for A.S.A. Adoption

AT THE last meeting of A. S. A. Sectional Committee, Project 221, American Gas Association Approval Requirements Committee, three sets of tentative standards and one set of recommended revisions were approved for presentation to the American Standards Association for adoption. These included requirements and recommended practice for house piping and appliance installation, approval requirements for portable gas baking and roasting ovens, and listing requirements for furnace temperature limit controls and fan controls, as well as revised requirements for semi-rigid tubing and fittings.

Although Requirements for House Piping and Appliance Installation have been available since 1928, it was felt that in view of their wide acceptance throughout the United States and Canada, their significance would be enhanced if adopted as American Standard. Additions were made to fully correlate these standards with applicable features in standards covering installation, maintenance, and use of piping and fittings for city gas sponsored by the National Fire Protection Association.

Tentative Requirements for Portable Gas Baking and Roasting Ovens were prepared as a result of increasing demands for Laboratories' approval for this type of equipment. The scope of these requirements applies to ovens which are manufactured, shipped, and are movable from place to place as a unit, including cabinet type ovens and sectional ovens, both of which have stationary decks. Part I specifies basic construction requirements for such equipment for use with all gases. Parts II, III, and IV cover performance requirements for use with city gases, liquefied petroleum, and butane-air gases, respectively.

In view of the growing demands for automatic controls on modern central house-heating gas appliances, it was decided to prepare listing requirements for additional types of such equipment. Availability of such devices listed in the Directory of Approved Gas Appliances and Listed Accessories will enable manufacturers to make a selection most suited for their particular needs. Listing Requirements for Furnace Temperature Limit Controls and Fan Controls are the first of this series of proposed standards prepared. They include suitable tests governing dial calibrations, sensitivity under extreme conditions of usage, as well as continued operation tests to insure satisfactory performance over long periods of service.

Revised American Standard Listing Equipments for Semi-Rigid Tubing and Fittings incorporate a number of major changes. Parts I and II cover construction and performance specifications, respectively, for such parts. Parts III and IV have been added to cover individually tubing and fittings for use in connecting gas appliances to house piping. In addition, current requirements have been strengthened to simulate the most severe use of these accessories in service.

These four sets of standards will become effective January 1, 1942. Any manufacturers so desiring may, however, submit their products for test in compliance in advance of that date. Under a recent ruling of the Laboratories Managing Committee, Certificates of Approval or Listing for Equipment complying with requirements which are not yet in effect will be dated as of the effective date of such standards.

■ ■

Oklahoma Commission Orders Well Spacing

Twenty acre triangular well spacing for a new gas field, west of the old Tiger Flats oil field on the Okfuskee-Okmulgee County, Okla., line, has been ordered by the Oklahoma Corporation Commission.

Such spacing will apply to all zones, including the Deaner, Cromwell, and Wilcox sands, over an area of 520 acres.

Burke-Greis Oil Corp., and H. N. Greis, trustee for the Deep Rock Oil Corp., have petitioned the corporation commission for 40-acre spacing and production regulations for a new area opened in Creek County, Okla. Petitions ask the commission to define a gas well for the area, suggesting that any well producing both oil and gas be defined as a gas well, if it makes 5000 cu. ft. or more of gas per barrel of oil.

■ ■

Lone Star Awarded Gas Load Of New Plane Plant

Lone Star Gas Co., Dallas, has been awarded a contract to furnish natural gas for all fuel requirements at the $7,000,000 warplane factory now under construction east of Grand Prairie, Tex., by North American Aviation, Inc. The company has constructed a 2500-ft. tie-in line to run north from the factory site, fronting on Jefferson Avenue, to Lone Star's 8-in. line from Dallas to Fort Worth.

The factory tie-in was rushed to completion in order to bring fuel service needed during construction of the plant. Uses to which gas service will be applied upon completion of the factory include steam generation, hot water heating, building heating, and the various processes of airplane fabrication.

SALES Slants

Automatic Heating Campaign

AUTOMATIC heating is definitely a contribution to better living, but millions of homes in America are still without it.

Acknowledging the truth of this statement, the management of the Minneapolis-Honeywell Regulator Co. during the past year set out to find the reasons therefor. As result of a survey in many of the principal centers in the United States, several interesting facts were discovered:

1. That Automatic Heating as such (not individual units) has neither been sold hard enough nor widely enough.
2. That all factors in the industry have not faced squarely its competition.
3. That this competition does not primarily arise within the Industry but springs from other devices such as the automobile, the radio, the electric refrigerator, and the washing machine.
4. That all of these have been in direct competition for the customer's dollar, and in order to get it have been very widely merchandised and nationally advertised during the period when the automatic heating industry was making rapid strides in the improvement of its own products.

These improvements in automatic heating, have not been backed by the same merchandising pressure nor the same millions of dollars in advertising money as their competitors, for obvious reasons, which is no fault of the automatic heating industry. However, there is one institution that serves the entire industry which is in an ideal position to do this much-needed job—Minneapolis-Honeywell. M-H Controls are used with all types of fuel and all types of heating systems.

Standing from left to right, are Minneapolis-Honeywell's George B. Benton, advertising manager; John W. Pauling, vice president; C. B. Sweatt, vice president in charge of sales; and seated, H. W. Sweatt, president and general manager.

As a result of its survey, this pioneer in the automatic heating field decided that in 1941 it would devote its entire advertising appropriation to a mass drive to sell the notion of automatic heating to the American public. The campaign, which will embrace six great national magazines, nationwide posting in selected centers on billboards, advertising in over 30 trade and professional publications, with dealer helps embracing direct mail, newspaper advertisements and mats, spot radio campaigns and window and counter display material, will start this month and continue throughout the year.

The important objectives which the campaign will stress are:

1. The tremendous improvement in all types of automatic heating in recent years.
2. The low cost of installing automatic heating.
3. The easy terms available under FHA and through other sources for financing its purchase, making it possible for any home owner now to enjoy its luxury and economy.

It is the earnest hope of Minneapolis-Honeywell that every manufacturer and dealer in Automatic Heating and Air Conditioning devices will take full advantage of this great mass drive and will get from it all possible benefit—by cooperation in his own markets and through his own distribution outlets. This campaign will be entirely financed by Minneapolis-Honeywell.

■ ■

The Kettle Kicked Out

Three years ago the United Gas Corp., writes T. E. Hawkins, manager of the Sales Promotion and Advertising Division, directed the theme "Kick Out the Kettle" against its customers who were using old-fashioned tea kettles for heating water. The campaign caught on, and in 1940 was expanded to include not only tea kettle users but also customers and prospective customers who were not using gas for water heating. Both campaigns were

In the
Good Old Days
● Saturday night bath time—patiently waiting your turn while more water was heated! Today, Automatic Gas Hot Water Service gives you an abundant supply of hot water at the turn of a faucet!
● Cheap, Dependable United Gas Service means cheap, dependable water heating in your home. Gas from hundreds of wells in scores of fields brought to you through an interconnected pipe line system is your assurance of uninterrupted comfort and convenience.
● Phone or visit your Gas Water Heater Dealer today. See how Automatic Gas Hot Water Service will save you hours of time. Buy NOW and save money!
UNITED GAS
CORPORATION
Buy From Your Plumber-Dealer

tremendously successful and the "Kick Out the Kettle" water heating campaign has become an annual activity of United Gas Corp.

To review briefly the results of these campaigns; in 1939 the company set a quota of 800 water heater sales, sold 1581 for a 197.6% of quota. For the 1940 campaign, the quota was boosted to 1050 water heater sales. At the end of the two-months' campaign the total sold was 1280, or 121.9% of quota. For all districts in company competition the new Iberia district was the winner with a quota of 50 and a sales of 107, for a quota percent of 214.

The third campaign started last December 26 and ended a few days ago, February 25. We are making a note to write Mr. Hawkins for the final results of this campaign.

■ ■

Hit Parade

"Miss America" has been selected by American Stove Co. as the standard bearer for that company's 1941 Hit Parade. Miss America in real life, reveals Lloyd C. Ginn, American Stove's promotion manager, is Frances Marie Burke, of Philadelphia, 1940 winner of the Atlantic City beauty pageant and holder of this year's crown of Miss America.

1941 Hit Parade activities will begin with the issuing of an elaborate red, white and blue presentation portfolio,

is divided into three sections, (1) announcing a complete new 1941 line of Magic Chef Ranges, (2) presenting the national advertising program for the first half of the year, and (3) outlining a lively array of advertising, display and promotion helps for dealers and gas utilities.

Full and half-page advertisements are appearing during February, March, April and May in *Saturday Evening Post, Woman's Home Companion, Ladies' Home Journal, Good Housekeeping, American Home* and *Better Homes & Gardens.*

You will recognize Miss America immediately in American Stove's Campaign — she is dressed in a fetching drum majorette costume, with baton poised, her step is jaunty, her eyes twinkling, her smile beckoning; she is quite pretty.

■ ■

Your Chances Doubled

This year, 12 salesmen instead of six will receive an all-expense honor trip to Miami, Cuba or the Bahamas as a reward for proficiency in American Gas Association's 1941 Refrigeration Campaign. The greatest registration in the history of the Refrigeration Committee Campaigns has thus far been recorded, and John W. West, Jr., secretary of the Residential Section of the A.G.A., reports that more than 513 companies and over 4500 salesmen have entered the 1940-41 drive. The total number of gas meters reported by the registered companies is more than 13,000,000.

Pace-makers among refrigeration salesmen are:

Division I—Roy Garner, Southern California Gas Co.

Division II—T. E. Myers, Consolidated Gas, Electric Light & Power Co.

Division III—Robert Scott, Central Illinois Light Co.

Division IV—J. V. Baxter, The Dallas Gas Co.

Division V—William O. Robinson, The Gas Service Co.

Division VI—Arthur L. Miller, The Gas Service Co.

The race has just started, and eight months remain. We wonder who will be coming down the stretch in front at convention time?

■ ■

CP Campaign for '41

Stressing the slogan, "For Everyone In Forty-One It's CP," a nationwide gas range sales campaign will be conducted this Spring and Summer by the Association of Gas Appliance and Equipment Manufacturers and the American Gas Association. The campaign was recently introduced to the public by the CP Gas Range manufacturers through utility companies and dealers throughout the United States.

The campaign, which contains numerous advertising and merchandising suggestions, has been planned for the continued promotion and sale of CP gas ranges, which were introduced to the public less than three years ago, and, through progressive promotional activities, were instrumental in the establishment of an all-time sales record in the gas range industry for 1940.

A comprehensive sales plan book recently distributed by the CP gas range manufacturers to utility companies and dealers throughout the country includes tested promotional pieces, suggested newspaper advertisements, direct mail pieces, window and floor display suggestions, bill enclosures, radio announcements, and various educational and contest plans for creative sales promotion.

The slogan of the campaign was inspired by the greatly increased interest in the gas range that scientists developed to provide an appliance for the housewife that would make it possible for her to cook more easily and economically.

More than 20 of the country's leading manufacturers now produce the Certified Performance gas range.

■ ■

Comfort Heating in Pittsburgh

The natural gas companies serving the greater Pittsburgh area are the publishers of a booklet "Heating Comfort." Volume 3, No. 1, of this booklet was sent to us by Emil Hofsoos, of Ketchum, McLeod and Grove, who prepared the booklet for the gas companies. The book reveals that there is a scientific way to measure weather in relation to househeating costs and goes on to present other reminders and suggestions as to how the consumer may keep his gas heating costs at a minimum.

DOTTED LINE ROSCOE . . . . . By Bob Crosby

"Mr. Roscoe's right, Pop, the light really does go out!"

ASSOCIATION *Activities*

S. G. A. Meeting Attracts 380 Delegates

By CRAIG ESPY

SALES and advertising, home planning as related to installations of modern appliances, community development, national defense, and ways and means for bringing the industry into greater favor with the public were among the many important subjects discussed by leaders of the industry at the Southern Gas Association and Gas Sales Conference held in Dallas February 10, 11 and 12.

C. B. Wilson presided over the conference attended by 380 delegates, an all time high in registration. At closing sessions H. Carl Wolf, president, Atlanta Gas Light Co., was elected president, L. B. Denning, Jr., first vice president, Frank C. Smith, second vice president and L. L. Baxter was relected secretary-treasurer. W. F. Wright, Dallas, A. E. Higgins, Pittsburg, Albert Sidney Johnson, Dallas, L. O. Gordon, Chattanooga, and Maurice White, Mobile were elected as new directors. Mobile, Ala., was selected as the 1942 conference site with the tentative dates for the meeting set at February 9, 10 and 11.

In making the keynote address on the general sessions program on the opening day, D. A. Hulcy, president, Lone Star Gas Co. stated that the gas industry can meet any demand placed upon it in connection with the national defense program at the same time that it continues to meet the normal requirements of its present customers. Major T. J. Strickler, president of the American Gas Association and Albert Sidney Johnson, president of Southern Union Gas Co., keynote speakers in later sessions made similar references to the position of the gas industry in the defense program. Hal Noble brought a greeting on behalf of the city of Dallas.

At the opening session C. B. Wilson highlighted the purpose of the meeting and presented a sound movie, "The Fires Must Never Go Out," produced by his company, Arkansas Louisiana Gas Co., under the direction of Paul Clay. Carl Wolf, presented the report of the Committee to Promote Business Progress. The aims of the committee include standardization, modernization and improvement of gas company offices, buildings and other properties.

At the second general session, J. H. Warden, Tulsa, spoke on Community Development pointing out the growing conviction among the progressive leaders of the industry of the need for taking a more active part in promoting the economic welfare of the communities served.

The home service program was presided over by Fannie May Izard, Mississippi Power & Light Co., Jackson. Albertine Berry, home service chairman, A.G.A. presented remarks about the national program, and Nell Read, San Antonio Public Service Co., told of her company's work with children and young people under the topic, "Home Service Looks to the Future."

At the closing general session, Major T. J. Strickler gave an address on War Economy and the Gas Industry and Frank C. Smith, Houston, spoke on the Institute of Gas Technology in which he reviewed the research movement of the gas industry and outlined the proposed plan now before the industry for creating the Institute.

Residential, industrial and technical gas sales conferences were held each afternoon of the convention. C. L. Osterberger, Louisiana Power & Light Co., presiding over the first mentioned conference, presented papers by J. Burr Gibbons of Tulsa, H. A. Watson, New York, J. R. Guidroz, J. W. Lea, Atlanta and Carl Dean of Tulsa.

J. Burr Gibbons of Gibbons Advertising Agency said that the public problem of the gas industry cannot be solved by what the gas company thinks is the matter with its business but rather by what the public thinks is the matter.

H. A. Watson, A.G.A.E.M., in giving the background of the CP Program told the delegates that the industry was meeting defeat from eight million Fifth Columnists now cooking with outmoded and out of date gas ranges. "The day of selling just another gas range," he said, "has passed. You should sell the advantages of the CP range, the greatest development of the gas industry since gas refrigeration."

In presenting the first of three papers on air conditioning and refrigeration, Jack Knighton, Servel, Inc., explained the many and varied benefits of real air conditioning as applied to the home.

Seward Abbott of Servel pointed out how gas refrigeration at no increased capital cost, even in the natural gas area improves the load factor. Norman E. Wooters, also of Servel, next stressed the place of gas refrigeration in both U.H.A. low-cost housing projects and in housing projects associated with defense activities.

R. L. Eeinman of Oklahoma City discussed another phase of the subject under the title, "On the Other Side of Another Door Bell." In a paper on "Self Respect in Every Gallon," J. H. Warden, Tulsa, recommended that a water heating council, composed of members of the gas industry, the electric industry, the oil and coal industries and the manufacturers of all types of water heaters, together with the suppliers of metals, be organized to foster a campaign to educate the people on the advantages and needs of hot water service for health and comfort. This section of the conference concluded with an address by Lyle Harvey, Bryant Heater Co., on "Selling Gas to Main Street."

In the Industrial Gas Sales Conference presided over by W. H. Ligon, Atlanta, Elmer May, New Orleans, outlined the progress made in air conditioning in 1940 by the gas industry. L. W. Crump, Oklahoma City, did a similar job for the subject of gas engines, by outlining the trends in gas engine sales and applications. I. M. Riles, Wheelco Instument Co., Greenville, S. C., discussed "Proper Controls on Industrial Equipment." In a paper on "Opportunties in Small Industrial Users of Gas," C. A. Drum, Eclipse Fuel Engineering Co., Houston, discussed various installations it is possible to sell to commercial or large industrial plants and gave some pointers for selling them.

In a paper, "Building Commercial Load With Small Gas Boilers," A. F. Burns, Shreveport, told how important are these installations because of their load factor. M. B. Mackay, The Bur-

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ON THE PAGE OPPOSITE

GAS camera goes into action at the meeting of the Southern Gas Association and Gas Sales Conference.

CHESTER L. MAY
Community Natural Gas Co.
L. L. BAXTER
Southern Union Gas System
J. M. FISHER
Bryant Heater Co.
H. T. RYAN
Robertshaw Thermostat Co.
LYLE C. HARVEY
Bryant Heater Co.
JOHN PANKOW
Detroit Michigan Stove Co.
WILLARD G. WIEGEL
Lone Star Gas Co.
ELMER F. SCHMIDT
Lone Star Gas Co.
D. L. HULCY
Lone Star Gas Co.

S. KELLY, Jr.
Gas Co.
C. B. DAY
Consolidated Gas Utilities Corp.
A. H. MILLS
Knoxville Gas Co.
A. B. BANOWSKY
United Gas Corp.
H. A. WATSON
A.G.A.E.
H. G. D'SPAIN
Mississippi Public Service Co.
C. B. WILSON
Arkansas Louisiana Gas Co.
MAJOR
T. J. STRICKLER
Kansas City Gas Co.
WATSON E. DERWEN
George D. Roper Co.

CARL WOLF
Gas Light Co.
H. LEIGH WHITELAW
Jones & Laughlin Steel Corp.
FRANK C. SMITH
Houston Natural Gas Co.
FANNIE MAY IZARD
Mississippi Power & Light Co.
GRACE LARABEE
Louisiana Power & Light Co.
ALBERTINE BERRY
Lone Star Gas Co.
NELL READ
San Antonio Public Service Co.
EUGENE D. MILENER
American Gas Assn.
W. H. LIGON
Atlanta Gas Light Co.

TICE FOR ALL.
L. M. TIBBALS
Community Natural Gas Co.
CARL L. TREVITT
Community Natural Gas Co.
WESLEY F. WRIGHT
Dallas Gas Co.
CHARLES SEIDENGLANZ
C. M. Seidenglanz Co.
E. C. JOULLIAN
Consolidated Gas Utilities Co.
H. LEIGH WHITELAW
Jones & Laughlin Steel Corp.
G. E. MAY
New Orleans Public Service Co.
C. L. NAIRNE
New Orleans Public Service Co.

ALBERT SIDNEY
C. H. ZACHRY
R. M. SCOGGINS
Arkansas Louisiana Gas Co.
ALLEN BURNS
M. L. JACOB
STARR THAYER

kay Co., Toledo, pointed out in connection with a paper on "Effects of the Sterilization Movement in Eating Places," how important it is for the gas industry to do something about selling and installing the proper capacity gas sterilization equipment in eating places.

Marion Chelf, Denver, especially pointed his remarks on "Commercial Gas Sales Problems," at making a reasonable profit while making the sale. E. F. Patterson presented the dish washing and sterilization problem from the standpoint of the manufacturers of this type of equipment. Eugene Milener, A.G.A., presented a movie produced by the New York State Health Department pertaining to the subject of proper sterilization. Carl Wolf, Eugene Milener and A. B. Banowsky took part in a symposium on "Modern Gas Counter Appliances."

One of the highlights of the Industrial Gas Sales Conference was the industrial gas inspection trip. The tour included visits to the City Sewerage Pumping Plant, Pollock Paper Co., Sears Roebuck and Ford Motor Co. L. G. Waskom, Dallas Gas Co., was organizer of the tour.

The Technical Gas Sales Conference, presided over by H. N. Oldham, New Mexico Eastern Gas Co., dealt with the technical training of men and the sales results secured therefrom, with papers on house heating controls, pipe coating, gas engine power, etc. Under the first mentioned classification, E. C. Joullian, Oklahoma City, stressed the continuation of training employes who work on customers' premises. R. A. Puryear, Jr., Anniston, Ala., Ardmore J. Healy, Fort Worth, and Sidney Chilton, Jackson, Miss., related experiences pertaining to the subject.

In an address on the "Operating Department and Public Relations," C. L. Nairne, New Orleans, discussed employer-employe relations, type of personnel and training of personnel as practiced by New Orleans Public Service Co. O. F. Reynolds, Chattanooga, E. E. Kean, Amory, Miss., and J. P. Terrill, Houston, shared in this assignment by giving their experiences on the subject. A. H. Mills, Knoxville, and Carl Lawrence, Atlanta, appeared in a symposium on "Operating Manuals, Their Use and Contents."

On the subject, "Practical Technical Application of New Wrinkles and Equipment in the Heating Field," O. A. Kinzer, Dallas, told about the changing trends in house heating with gas in the southern states. M. S. Bolinger, Shreveport, said that too many gas men had been discounting proper venting and showed how absolutely necessary it is for heating appliances to be properly vented in order to gain customer satisfaction. On this subject, J. Harvey Wilson, Santa Fe, N. M., explained the problems of properly venting appliances at high altitudes. W. R. Nason, General Controls Co., discussed "Gas Actuated Controls" and Starr Thayer, Houston, read a paper on "Adaptation of Pipe Coatings to Soil Conditions," later presenting a moving picture demonstrating the proper method of coating a line. J. C. Reid, Dallas, related the experience of Southern Union Gas Co. on this subject. In a paper on gas engines, E. A. Barolina, Blackwell, Okla., pictured the gas engine load as being one of the most desirable loads to be obtained by the gas industry due to the fact that, in most cases, it provides a year-round customer with a high load factor.

In the closing address of the convention delivered at the general convention luncheon, Albert Sidney Johnson, president, Southern Union Gas Co., stated that the natural gas industry conducts its business on as high a plane as does any other business in the country but it suffers from the sins of those who have preceded. "We are the victims of unfounded gossip," he said, "and of the belief that our business is a monopoly, though our business is not in fact a monopoly. The industry has failed to present itself to the public in the proper light," he pointed out, "and it is time to remedy that failure with an aggressive, stand-on-your-feet, speak-right-out-in-meeting kind of program."

The entertainment features of the convention were the Smoker, the President's Banquet and Dance, and the Ladies' Luncheon and Style Show.

At the Mid-West Gas Sales Conference

"COMPETITION is stimulating, but it can also be dangerous, and the adversary best prepared and most aggressive will be the one to win out." Thus spoke E. G. Peabody, presiding over the 15th Annual Mid-West Gas Sales Conference, in his opening address, as he compared gas appliance sales in the cooking, refrigerating, water heating and heating markets with the sales of appliances utilizing inferior fuels in expressing the need for a more aggressive sales program. The conference met at the Edgewater Beach Hotel, Chicago, February 17 and 18, and drew the unprecedented attendance of 656 delegates from 24 states.

Clifton M. Utley, writer, news commentator and radio speaker, appeared next on the program, speaking on the subject, "Crystal Gazing at American Industry." Major T. J. Strickler, president, American Gas Association, dwelt upon the grave problems facing the nation and pointed out the prominent part the gas industry is taking in the national defense program.

B. H. Wittman, presiding over the second session, introduced as the first speaker James Watson, training director of Montgomery Ward, who pointed out that products of the industry must be dramatized and staged after the technique of the theater in order that the best sales job may be done. He also stressed the importance of more interesting and more enthusiastic salesmanship.

R. J. Rutherford, chairman, Residential Section, A.G.A., next spoke of the work of the affiliated associations in providing plans, contests, advertising and everything necessary to contribute to steady advancement of sales in 1941.

Reporting on the advancement made by Public Service Co. of Indiana in selling gas for househeating since 1936 when the company changed over from manufactured to natural gas, J. D. Alford stated that out of 2010 residential and commercial heating jobs that had been installed only 97 had been removed. The new home market increased from 32% in 1937 to 60% in 1940, he said, and company and dealer sales have increased 64%. His talk closed with recommendations concerning sales policies.

"Of all opportunities available to the gas industry, I see none equal to that provided by the gas refrigerator," said B. T. Franck, chairman of the Refrigeration Committee of the A.G.A., as he urged the industry to increase the sales of this appliance.

J. C. Sackman, Northern Indiana Public Service Co., presided at the Tuesday morning meeting, first introducing Frederick W. Nichol, vice president and general manager, International Business Machines Corp., who urged that the word, *Why*, be constantly on the tongues of sales executives. Selling, he said, "is telling about your product in such a way that people will

At The Mid-West Regional Gas Sales Conference

We Sell More Gas," Edwin Vennard, Middle West Service Co., stated that gas has an advantage over the electric business in the principal fields opened to it. The gas industry, he says, is equipped with the merchandise, with the service, promotional rates, competitive position and all the tangible factors required to make the sale. The electric industry has, however, the *will* to sell and this is what the gas industry must develop.

In the closing events of the conference, F. Harold Van Orman, president of the Van Orman Hotels, Evansville, Ind., called upon the gas men to be loyal to their companies, to their industry, and to sell the superiority of their fuel. Morgan L. Fitch, president of the Chicago Real Estate Board, told the audience that when you contribute to the home, as does the gas industry, you strengthen mankind.

In a talk on "Hot Water and Heating," G. M. Rohde, Jr., Ruud Manufacturing Co., Pittsburgh, pointed out how gas water heating can be sold by talking about a positive temperature for hot water.

Two talkie pictures, released by Modern Talking Picture Service, Inc., entitled "Fun in the Kitchen," featuring Hedda Hopper, Don Wilson and Mantan Moreland and "The Autopsy of a Lost Sale," featuring Borden and Bussey were presented in the course of the program.

George Scofield, chairman of the Range Committee, A.G.A., reported on the gas ranges sold in the CP Range Contest and presented trophies as awards to the following divisional and regional winners: F. W. Budd, Central Indiana Public Service Co.; W. M. Chamberlain, Michigan Consolidated Gas Co., Grand Rapids Division; E. J. Boyer, Minneapolis Gas Light Co.; Dan Garrity, Western United Gas & Electric Co.; and A. Kanekeberg, Public Service Co. of Colorado, in behalf of their various companies.

The skit, "Modern Is as Modern Does" was the last feature of the program. In this, representatives of Citizens Gas and Coke Utility Co., Consolidated Gas Co., Grand Rapids Division, St. Louis County Gas Co., and Minneapolis Gas Light Co., presented a cavalcade of cooking with gas starting with the year 1885 and bringing the scene down to the present day gas range. Albertine Berry, Dallas, national chairman home service, and J. R. Abrams, advertising manager of A.G.A.E.M., were also presented in this skit. H. D. Valentine, Peoples Gas Light & Coke Co., was the interlocutor.

Karen Fladoes presided over the Home Service Breakfast and introduced as guest speaker Patricia Dougherty, women's editor, Chicago Herald-American. Elizabeth Lynahan and Vivette Gorman, The Peoples Gas Light & Coke Co., presented a one-act comedy drama entitled, "Mrs. Muffit Takes the Cake."

A dinner, attended by 1100 persons, on the first evening of the conference provided a departure from entertainment features of former conferences. The dinner was sponsored by a group of domestic gas equipment manufacturers and their representatives.

CALENDAR

March

Spring Sales Conference, Pacific Coast Gas Association — Los Angeles, Calif., March 6-7.

A.G.A. Conference, Industrial Gas Sales —Lord Baltimore Hotel, Baltimore, Md., March 13-14.

Oklahoma Utilities Association—Tulsa, Okla., March 17-18.

Wisconsin Utilities Association, Gas Section, Commercial and Technical Divisions —Wisconsin Hotel, Milwaukee, Wis., March 17-18.

New England Gas Association—Hotel Statler, Boston, Mass., March 27-28.

Spring Technical Conference, Pacific Coast Gas Association — Los Angeles, Calif., March 27-28.

April

American Society of Chemical Engineers —Atlanta, Ga., April 1-3.

Mid-West Gas Association—Hotel Nicollet, Minneapolis, Minn., April 14-16.

Southwestern Gas Measurement Short Course—College of Engineering, University of Oklahoma, Norman, Okla., April 15-17.

Gas Meters Association of Florida and South Georgia—Hollywood, Fla., April 21-22.

A.G.A. Distribution Conference—Pittsburgh, Pa., April 21-23.

Missouri Association of Public Utilities —Elms Hotel, Excelsior Springs, Mo., April 23-25.

A.G.A. Hotel, Restaurant and Commercial Sales Conference—Palmer House, Chicago, Ill., April 24-25.

May

A.G.A. Convention, Natural Gas Section —Dallas, Texas, May 5-8.

National Metal Trades Association—Palmer House, Chicago, Ill., May 8-9.

Pennsylvania Gas Association—Skytop, Pa., May 12-14.

A.G.A. Production and Chemical Conference—New York, N. Y., May 19-21.

Western Metal Congress and Exposition —Biltmore Hotel, Los Angeles, Calif., May 19-23.

Canadian Gas Association—Hamilton, Ontario, May 20-21.

Natural Gas and Petroleum Association of Canada—Hamilton, Ontario, May 22-23.

June

Association of Gas Appliance and Equipment Manufacturers — Ambassador Hotel, Los Angeles, Calif., June 3-5.

Pacific Heating and Air Conditioning Exposition—San Francisco, Calif., June 16-20.

Michigan Gas Association—Grand Hotel, Mackinac Island, Mich., June 30, July 1 and 2.

September

Mid-West Gas School and Conference —Ames, Iowa, September 8-10.

Empire State Gas and Electric Association—Saranac Inn, Saranac, N. Y., September 11-12.

Annual Convention, Pacific Coast Gas Association—Del Monte, Calif., exact date not yet set.

October

23rd Annual Convention, American Gas Association—Atlantic City, N. J., the week of October 20, 1941.

A.G.A.E.M. Appliance and Equipment Exhibition—Atlantic City, N. J., the week of October 20, 1941.

N.E.G.A. Division Meetings

The Industrial Division Meeting of the New England Gas Association was held in Worcester, Mass., on February 14. The morning was devoted to an inspection of two industrial gas installations at the plants of the Table Talk Pie Co. and the Massachusetts Steel Treating Co., while the afternoon business session was highlighted by addresses by Herman Gehnrich, of Gehnrich and Gehnrich Corp., Woodside, N. Y., who spoke on "New Developments in Forced Circulation of Air in Heating of Ovens,"; and by Professor Carl Johnson of the Worcester Polytechnic Institute, the title of whose address was "General Heat-Treating."

The meeting of the Accounting Division was held at the Hotel Bradford in Boston on February 20. The afternoon session included addresses by A. W. Johnston, Jr., superintendent of Customer Service, The Hartford Gas Co., whose title was "Meter Accounting Statistics and Use," and Theodore H. Brown, Professor of Business Statistics, Harvard Business School, who spoke on "Some Problems in Presenting Accounting Reports." Following the election of officers and directors for 1941, the evening session featured a paper by J. Carr Stewart, auditor, Blackstone Valley Gas & Electric Co., entitled "Alphabetic Tabulating Cards for Customer Records" and one by Herbert U. Smith, counsel for the New England Gas Association, who spoke on the "Legal Responsibility of Accountants."

The Sales Division of the N.E.G.A. held their meeting in Boston on February 28. Addresses given there were: "Home Service Helps the Salesman," by Lillian P. Dunbar, chairman, N.E.G.A. Home Service Group; "How CP Overcomes Competition," by H. A. Watson, Association of Gas Appliance and Equipment Manufacturers; and "Sentences that Sell," by the noted Elmer Wheeler, president of the Tested Selling Institute, N. Y.

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P.C.G.A. Spring Conferences

One of the sales activities of the Pacific Coast Gas Association occurred this month with the holding of the annual spring sales conference by that group, March 6 and 7, in the Ambassador Hotel, Los Angeles. Opening with a general session meeting presided over by O. R. Doerr, general chairman of the Sales and Advertising Section, the meeting included special sessions presided over by their respective chairmen, which follow:

Domestic Sales, J. E. Kern, chairman; Commercial and Industrial Sales, J. H. Gumz, chairman; Advertising, A. C. Joy, chairman; and Home Service, Mildred Kier, chairwoman.

In addition, two luncheon addresses were presented: "Business is on the March," by Don Belding, vice president of Lord and Thomas, and president of Pacific Advertising Clubs Association, and "Vocational Training Activities of the National Defense Commission, by William K. Hopkins, industrial relations manager, Union Oil Co.

The P.C.G.A. is also going to hold a spring technical conference at the Hotel Mayfair, Los Angeles, March 27 and 28. This will be the first of a series of technical meetings to be held throughout 1941, culminating in the technical sessions of the annual A.G.A. convention in October. C. P. de Jonge, of the San Diego Gas and Electric Co. is chairman of this section.

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Wisconsin Utilities Ass'n.

The Gas Section of the Wisconsin Utilities Association will hold its convention March 17 and 18, Wisconsin Hotel, Milwaukee. The Commercial and Technical Divisions of the Section will hold a combination session on the first day, and will conduct separate sessions on the second day.

The program for the combination session includes the following speakers: Major T. J. Strickler, Kansas City, Mo., president of the American Gas Association; A. P. Gale, Madison, president of the Wisconsin Utilities Association; Bruno Rahn, Milwaukee, president of the Milwaukee Gas Light Co.; H. A. Watson, New York, Field Counsellor, Association of Gas Appliance & EquipmentManufacturers; and Ralph Towne, Toledo, Surface Combustion Corp.

The Commercial session on the second day includes the following speakers: Miss Karen Fladoes, Chicago, home service director of the Peoples Gas Light & Coke Co.; Lyle Williams, Wausau, Wausau Gas Co.; C. E. Bartlett, Pittsburgh, Rudd Manufacturing Co.; and B. T. Franck, Milwaukee Gas Light Co.

The Technical session on the second day includes the following speakers: Frank Holaday, Baraboo, Wisconsin Power & Light Co.; Prof. O. L. Kowalke, Madison, University of Wisconsin; A. D. MacLean, Pittsburgh Equitable Meter Co. and Arden O. Knutson, Milwaukee Gas Light Co.

Round table sessions will be held by both divisions on the afternoon of the second day. The technical groups include the Gas Manufacture Committee, the Meter and Pressure Regulator Committee, and the Customer Service Committee. The commercial groups are Commercial & Industrial House Heating & Air Conditioning Committee, Water Heating Committee, Cookery Committee, and Commercial Cooking, Refrigeration and Baking Committee.

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Oklahoma Utilities Ass'n

Subjects of mutual interest to gas and electric utilities have been scheduled for the annual Oklahoma Utilities Association convention, at Tulsa, Okla., March 17 and 18.

Separate meetings of the Gas and Electric divisions of the association are scheduled for the forenoon of the opening day, when a chairman for each division will be elected to serve for the succeeding 12 month. Regular convention sessions will open in the afternoon.

W. L. Woodward, Alva, president, Zenith Gas System, Inc., chairman of the program committee, has announced the following speakers: R. K. Lane, Tulsa, president of the association; Richard Lloyd Jones, vice president and business manager of the Tulsa Tribune on, "The Newspaper Viewpoint of the Utility Industry"; C. M. Ripley of the General Electric Co., Schenectady, New York; P. MacDonald Biddison, consulting engineer, Dallas, Texas; Paul Pinson, Tulsa, attorney, Oklahoma Natural Gas Co.; and Judge Oras A. Shaw, Tulsa, who will talk on "Chemurgy."

W. H. Carson, dean, college of engineering, University of Oklahoma, will outline the program of the Southwestern Gas Measurement Short Course to be held at Norman, Okla., April 15-17.

Principal speaker at the banquet of the Oklahoma Utilities Association convention, to be held Monday night, March 17, will be Dr. A. Linscheid, president, East Central State College, Aada, Okla.

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N.E.G.A. Annual Meeting

The Annual Meeting of the New England Gas Association will be held at the Hotel Statler in Boston, Mass., March 27-28. Over 600 gas men are expected to attend the meeting, which will feature an appliance exhibit, a panel dinner, and 29 speakers. The theme of the meeting is to be "Progress Through Research and Sales."

A few of the featured addresses which will be presented are: "Gas Association Work," by Alexander Forward, managing director, American Gas Association; "The Association's Year," by Clark Belden, executive secretary, The New England Gas Association; "Manufacturers' Association Developments," by W. E. Derwent, president, Association of Gas Appliance and Equipment Manufacturers; The Presidents Address by John A. Weiser, president, the New England Gas Association; and "The Gas Industry is Ready for the Test," by Thomas J. Strickler, president, American Gas Association.

A panel discussion dinner will also be presented by Thomas D. Connolly, of Columbia Broadcasting System; Paul Cornell, formerly chairman of the American Association of Advertising Agencies; J. Davis Danforth, vice president, Batten, Barton, Durstine & Osborn, Inc.; William E. Haskell, assistant to the president, the New York Herald Tribune; and Harford Powell, managing director, Institute of Public Relations, New York. These men will discuss sales promotion, advertising, public relations and business economics.

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A.G.A. Industrial Conference

This month the American Gas Association's 1941 Conference of Industrial Gas Sales will be held at the Lord Baltimore Hotel, Baltimore, Md., March 13 and 14. Sales and load building will be emphasized but in addition an unusual group of utilization development and research subjects, including descriptions of several new types of various gas applications will be discussed.

H. Carl Wolf, chairman of the conference and president of the Atlanta Gas Light Co., will call the Thursday morning Sales and Utilization Session to order.

Highlights of the program to be presented are as follows:

"Gas Fuel for Short-Cycle Curing of Industrial Finishes," by Carl P. Mann, The Selas Co., Philadelphia, Pa.

"The Sales and Use of Gas Unit Heaters in Industrial Plants," by W. N. Blinks, General Gas Light Co., Kalamazoo, Mich.

"Uses of Gas in the Production of Munitions, Particularly Shells and Guns for Aerial Warfare," by F. Colman Starr, Surface Combustion Corp., Philadelphia, Pa.

"The Industrial Department's Responsibility to Management," by Charles M. Cohn, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

"Important New Developments in Applying Direct Radiant Gas Heat to Ceramic Firing," by Frederic O. Hess, The Selas Co., Philadelphia, Pa.

Five-Minute Reports on Outstanding

1940-1941 Industrial Gas Equipment Developments, by Elmer B. Dunkak, The C. M. Kemp Mfg. Co., Baltimore, Md.; Slade Gamble, National Machine Works, Chicago, Ill; Herman Gehnrich, Gehnrich & Gehnrich, New York, N. Y.; P. C. Osterman, American Gas Furnace Co., Elizabeth, N. J.; O. N. Sellers, Sellers Engineering Co., Chicago, Ill.; Alvin M. Stock, The Partlow Corp., New York, N. Y.

"Newly Developed Technical Information of Value in Applying Industrial Gas," by William R. Tellar, chief testing engineer, A. G. A. Testing Laboratories, Cleveland, Ohio.

"The Part Industrial Men Can Play in the Most Effective Use of Sales Promotional Material," by Harry W. Smith, Jr., American Gas Association, New York, N. Y.

"Gas Air Conditioning, With Particular Reference to New Industrial Applications and Combination Installations" (sponsored by Joint Committee on Summer Air Conditioning); leader, Charles R. Bellamy, Columbia Gas & Electric Corp., New York, N. Y. "Joint Committee on Summer Air Conditioning," breakfast meeting. Charles R. Bellamy, chairman.

George F. B. Owens, vice president of the Industrial and Commercial Gas Section and assistant vice president of the Brooklyn Union Gas Co., presided over the afternoon meeting at the conference, which brought a message from Alexander Forward, managing director of the A.G.A.

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Missouri Ass'n Lays Plans

The annual State convention of the Missouri Association of Public Utilities will be held on April 23, 24, and 25 at the Elms Hotel, Excelsior Springs, Mo. Ben C. Adams, Gas Service Co., Kansas City, Mo., president of the Association, will preside at the business sessions.

Among the speakers will be: Major T. J. Strickler, Kansas City, Mo., president, American Gas Association; Dr. James S. Thomas, Detroit, Mich., president, Chrysler Institute of Engineering; J. Raymond Schutz, Indianapolis, Ind., president, Standard Life Insurance Co. of Indiana; Harry Hancock, New York City, chairman, Natural Gas Section, American Gas Association; M. W. Myers, Kansas City, Mo., supervising engineer, Travelers Insurance Co.; and J. H. Warden, Tulsa, Okla., Oklahoma Natural Gas Co.

Some of the subjects will be: "Yesterday, Today and Tomorrow"; "Gearing Industry to National Defense"; "Community Development"; "The Economic Future of the United States"; "Your Crime Against Safety"; "Looking Ahead."

A statewide Speaking Contest for employees of gas and electric companies in Missouri for cash prizes will be held on the evening of April 23. The subjects will be: For women—"Does the Utility Customer Get His Money's Worth?"; for men — "The Utilities' Part in National Defense." Seven companies will have contestants.

An Open Forum on the afternoon of April 24 for the discussion of timely utility problems will be in charge of E. H. Lewis, Webster Groves, Mo., vice president, St. Louis County Gas Co.

The program is in charge of a committee under the direction of C. D. Greason, Kansas City, Mo. An entertainment program is being arranged by a committee under Paul C. Ford, Kansas City, Mo. Jesse Blythe is assistant secretary of the association.

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Southwestern Short Course

The program is being whipped into shape for a bigger and better Southwestern Gas Measurement Short Course at Norman, Okla., April 15, 16 and 17, according to word received from Short Course officials.

Under sponsorship of the College of Engineering, University of Oklahoma, assisted by the Oklahoma Utilities Association and other organizations, the Short Course has grown from an attendance of 60 at the first session 16 years ago to one of 650 representatives of the gas and oil industries, who came last year from 21 states, from Canada and Mexico to study the latest approved methods of measuring and handling natural gas.

Chairman of the general committee in charge of the 1941 Short Course is Ray L. Rountree, United Gas Pipe Line Co., Shreveport, La.

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Commercial Sales Conference

The program being shaped up for the 1941 A.G.A. Hotel, Restaurant and Commercial Sales Conference, scheduled for the Palmer House, Chicago, Thursday and Friday, April 24 and 25, will be "loaded for bear" when it comes to ways and means of cashing in on the improving business of the country's commercial establishments—particularly those engaged in quantity cookery.

Headliners already signed up are: Paul Moore, president of the John R. Thompson Co. (Thompson's national restaurant chain), who will delineate trends in "Modern Food Service" from the restaurateur's point of view. F. X. Mettenet, vice president in charge of sales, The Peoples Gas Light and Coke Co., Chicago, will handle "Views on Hotel, Restaurant and Commercial Gas Sales" from the utility management side.

Successful case histories in load-building will be described by E. V. Fineran, Washington Gas Light Co.; R. D. Maxson, Public Service Co. of Northern Illinois; and J. B. Druse, Milwaukee Gas Light Co.

On the technical side, will be "Is There Excess Heat in Restaurants?—An Analysis of Recent Studies," by C. George Segeler, engineer of Utilization, A.G.A.; a paper on "Progress in Miscellaneous Commercial Gas Equipment; and Informal Round-Table Information Sessions on "Commercial Ranges and Broilers," "Volume Water Heating and Steam Uses," and "Counter Appliances."

Presiding over the sessions will be H. Carl Wolf, president, Atlanta Gas Light Co.; George F. B. Owens, assistant vice president, The Brooklyn Union Gas Co., and T. J. Gallagher, manager of commercial gas sales, The Peoples Gas Light and Coke Co.—respectively the chairman, vice chairman and program committee chairman, of the A.G.A. Industrial and Commercial Gas Section. Through the courtesy of the Hotel, Restaurant and Commercial Division of the A.G.A.E.M., Stanley E. Little, division chairman, receptions in the Gas Equipment Friendship Room will be sponsored in connection with the conference.

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A.G.A.E.M. 1941 Convention

Plans for the forthcoming annual convention of the Association of Gas Appliance and Equipment Manufacturers, to be held at the Ambassador Hotel, Los Angeles, June 3-5 are now being formed. At a recent meeting held by the convention committee, R. G. Logue, A.G.A.E.M. program chairman, presented the tentative program which had been prepared at a meeting of the program committee, at which were present Mr. Logue, W. R. Smith, P.C.G.A. general chairman, and C. A. Swigart, P.C.G.A. representative.

According to Chas. Byrd, A.G.A.E.M. convention manager, the registration fee for the convention will be $5.00 for men, with no fee for women. This fee will entitle one couple to participate in all of the entertainment features of the convention without extra charge.

Scheduled so far for the meeting, in addition to the business program, are a golf tournament, a trip to Santa Catalina Island, a dinner dance at the Cocoanut Grove, and the annual President's Dinner.

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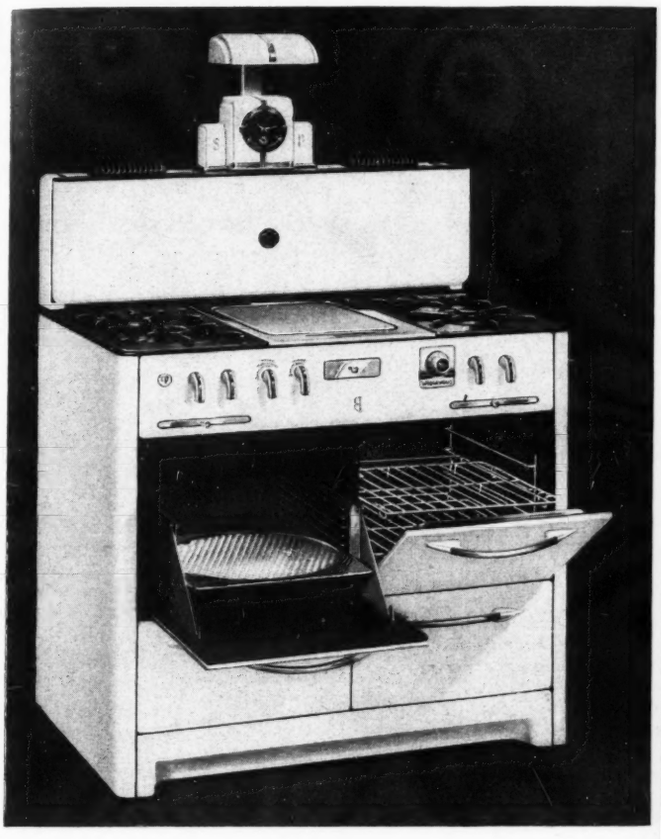

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Barbecue High Broiler, Divided Top Griddle

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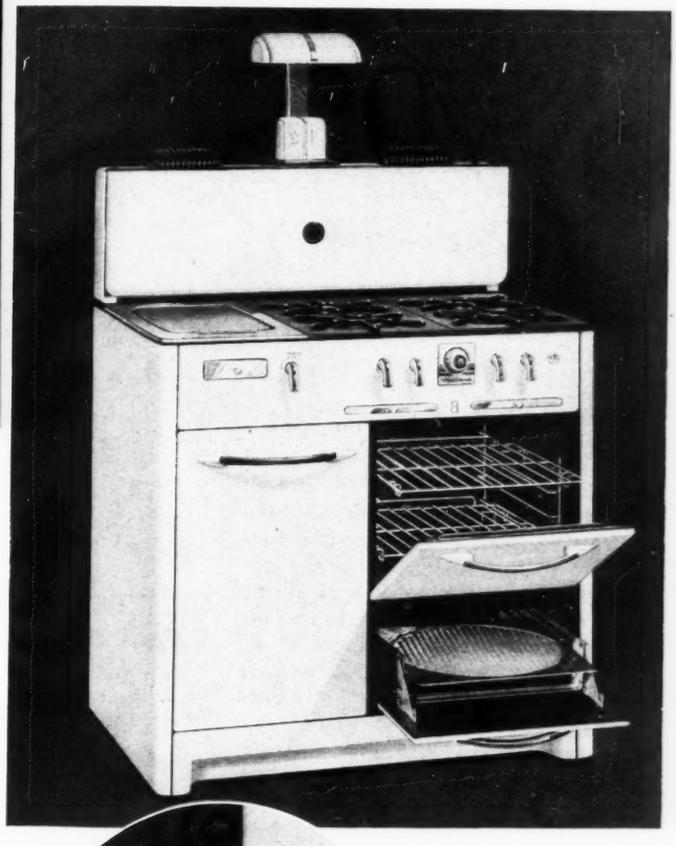

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With Top Griddle and Warmer. Ideal for Hotcakes and Frying.

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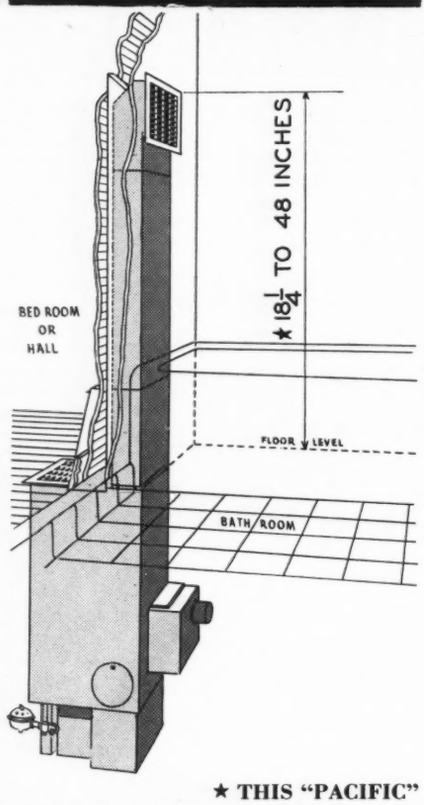

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27 Successful Years and still growing!

California Appliance Society Elects Officers for 1941

THE Gas Appliance Society of California has announced the election of Louis J. Breuner of Breuners, Oakland, as state president; Edward J. Hinchey, James Graham Manufacturing Co., San Francisco, vice president; O. R. Doerr, Pacific Gas and Electric Co., San Francisco, secretary; S. W. Newman, Chas. Brown and Sons, San Francisco, treasurer; and B. W. Reynolds, Pacific Gas and Electric Co., San Francisco, promotional director.

New directors elected follow: Frank K. Runyan, vice president, Western Merchandise Mart, San Francisco; G. P. Egleston, H. R. Basford Co., San Francisco; A. M. Bopp, Fisher-Glassford Hardware Co., Fresno; Henry Bostwick, Pacific Gas and Electric Co., San Francisco; P. R. Danford, Danford Sales Co., San Francisco; Lawrence Ellis, Weinstock, Lubin and Co., Sacramento; George W. Fitch, Retail Furniture Association of California, San Francisco; George Glans, McKenley-Glans Furniture Co., San Jose; Marshal Hale, Jr., Hale Bros., San Francisco; Edward Lachman, Lachman Bros., San Francisco; Lyman W. Ling, Jackson Furniture Co., Oakland; A. H. Meyer, Leo J. Meyberg Co., San Francisco; C. A. Miller, Servel, Inc, Oakland; E. P. Millikan, American Stove Co., San Francisco; Roy Ohnimus, Hammer-Bray Co., Oakland; George D. Oliver, Jr., Turner Hardware and Implement Co., Stockton; Obert Pedersen, Pedersen Furniture Co., Santa Rosa; A. F. Rice, Occidental Stove Co., San Francisco; H. A. Saxe, Jr., Sterling Furniture Co., San Francisco; LeRoy Smith, California Retail Hardware Association, San Francisco; J. Strohmaier, Gernhardt-Strohmaier Co., Oakland, and J. A. Werner, Dohrmann Commercial Co., San Francisco.

R. E. Fisher, of the Pacific Gas and Electric Co., San Francisco, was made an honorary life member of the Society. The only other life memberships in the organization at present are held by Harold R. Basford, H. R. Basford Co., and H. A. Jackson, James Graham Manufacturing Co., both of San Francisco.

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Shell Oil Co. to Build Butadiene Plant

Shell Oil Co., Inc., on February 20, announced the award of a contract for the construction of a plant at its Houston, Tex., refinery for the manufacture of butadiene, basic ingredient of synthetic rubber.

Scheduled to be in operation by early summer, this plant will have an annual capacity in excess of 5000 tons. Since 90% of the natural rubber requirements of the United States is imported from countries outside of the American continent, the construction of this plant represents a significant forward step in the development of synthetic materials required for National Defense.

The contract for the new butadiene plant has been awarded to the C. F. Braun Co. of Alhambra, Calif., and construction will start immediately.

■ ■

Pacific Heating Exposition To Be Held in June

California and the entire Pacific Coast region will preview this year many noteworthy advances in indoor climate control for human comfort and industrial protection when the heating, ventilating and air conditioning industry convenes in San Francisco for a series of engineering meetings in conjunction with the Pacific Heating & Air Conditioning Exposition, to be held in the Exposition Auditorium, June 16 to 20.

The Exposition, under auspices of the American Society of Heating & Ventilating Engineers, will be an intermediate in the biennial sequence of Heating & Ventilating Expositions started in 1930, and is to be held in conjunction with the summer meeting of that Society, whose relatively large membership on the Coast is represented by local chapters at San Francisco, Los Angeles, Portland and Seattle. The Heating, Piping and Air Conditioning Contractors National Association will also meet during the same period.

■ ■

Gas Utility Revenues Show Gain in December, 1940

Revenues of manufactured and natural gas utilities amounted to $86,641,600 in December, 1940, as compared with $79,223,500 for the corresponding month of 1939, an increase of 94%, it was announced today by Alexander Forward, managing director of the American Gas Association. Revenues from industrial and commercial users rose from $25,714,600 a year ago to $27,817,400 in December, 1940, a gain of 8.2%. Revenues from domestic uses such as cooking, water-heating and refrigeration, etc., rose from $53,508,900 in 1939 to $58,824,200 in 1940, an increase of 9.9%.

The natural gas utilities reported revenues of $51,229,800 for the month, or 12.3% more than for December, 1939. Revenues from sales of natural gas for industrial purposes gained 7.1%, while revenues from sales for domestic purposes increased 14.5%.

■ ■

Michigan Fuel and Light Firms Merged

The Michigan Fuel and Light Co. of South Haven, Mich., will become known as the National Utilities Co. of Michigan, according to plans of a merger of Michigan gas companies which became effective February 1. Permission for the merging of two Michigan companies, the Michigan Fuel and Light Co. and the National Gas and Electric was granted by the state corporation and securities commission at Lansing. The new plan is not expected to effect any change in the personnel of the Michigan Fuel and Light Co. which at the present time is headed by George Seymour.

■ ■

Community Natural to Have New Home in Denison, Tex.

New quarters for Community Natural Gas Co., Dallas, Tex., at Denison, Tex., will be provided with completion by the company of a modern office and warehouse building on west Main street in that city. The property, which includes a one-story brick building and two lots on which the building is located, will be adapted for company use and work on the project will start early in the spring, Chester L. May, president of Community Natural, has announced.

■ ■

Natural Gas for Moss Point

The city of Moss Point, Miss., recently advertised its intention to receive bids for a complete natural gas transmission and distribution system for the purpose of transmitting natural gas to the city of Moss Point, and distributing this gas to the people of the city.

EXCLUSIVE FEATURES
THAT ARE A STANDOUT

ROPER
GAS RANGES

OFFER YOU REFINEMENTS THAT BUILD SALES VOLUME

THE EXCLUSIVE ROPER "GLO" BROILER

Up to 20% faster. Broils with "Infra-Red" rays. A sure-fire sales builder.

Other Exclusive Roper Features

"Observ-alite"
Giant "Store-All"
"Peasant-Ware" Grill
"Staggered Top"
"3-in-1" Oven
"Lifetime" Cooking Chart
"Simmer-Speed" Top Burners
"Scientific" Broiling Chart
"Seal-Tight" Oven

3 MAJOR OFFENSIVES IN A PROMOTION CAMPAIGN THAT STEPS UP PROFITS

Roper offers exclusive range features and smashing sales programs that are a revelation to the industry. "Let Freedom Ring" is a timely promotion that is covering the nation. The "Staggered Top" campaign lends extra value to a Roper franchise. "Demonstration Days" is a stimulus for logging sales. Add these to Roper year-'round helps and new 4-color visualizer—and you have the complete answer to increased sales volume. *Again—in 1941 it's Roper.*

GEO. D. ROPER CORPORATION

GENERAL SALES OFFICE AND PLANT: ROCKFORD, ILLINOIS

Chicago: 343 S. Dearborn Street; Atlanta: 901 William Oliver Building; Los Angeles: 2481 Porter Street; Philadelphia: 401 N. Broad Street; Jersey City: 629 Grove Street; Dallas: Santa Fe Building, Second Unit; Houston: M & M Building; Cincinnati: 626 Broadway; Oakland: 500 Kirkham Street; Cleveland: 2053 East 105th Street; Kansas City; Boston; Washington; Roanoke; Pittsburgh; New York; Denver.

ROPER GAS RANGES FOR ALL GASES INCLUDING LIQUEFIED PETROLEUM GAS

INDUSTRY *Personalities*

• Several changes in the assignments of personnel of the gas department of the Philadelphia Electric Co., Philadelphia, were recently announced. **J. A. English** was appointed general superintendent of the gas department. Since 1938, Mr. English has been general superintendent of the Gas Handling and Manufacturing Division. **R. H. Whipple** succeeded Mr. English as superintendent of the Production Division, leaving the post of engineer he has occupied with the company since 1929.

J. H. Long was appointed superintendent of gas plants. Filling his former position as superintendent of the Chester, Pa., gas plant is **J. W. Carroll. E. E. Witham** was appointed senior engineer, gas department.

• It was recently announced that **H. P. Sedwick,** general manager, and **W. J. MacPherson,** manager of industrial relations, had been elected vice presidents of the Public Service Co. of Northern Illinois. Mr. Sedwick will continue to serve as general manager and Mr. MacPherson will remain in charge of the company's industrial relations.

Mr. Sedwick joined Public Service in 1913. Mr. MacPherson started work in 1911 for the Northwestern Gas Light and Coke Co. which was later consolidated with the Public Service company.

• Reorganization of the Dallas Gas Sales personnel of the Lone Star Gas Co. in conformance with increased activity of the department has been announced by **C. K. Patton,** new business manager. Effective recently, **Chester C. Young,** former assistant house heating engineer, was placed in direct supervision of general appliance salesman under **J. M. Lynn,** sales supervisor. **Earle G. Brown** will continue as direct supervisor in charge of refrigeration salesmen, under Mr. Lynn.

Eddie Watkins, general floor salesman, has been named assistant to the sales supervisor and will aid in all general sales activities of the department.

• **Alton B. Parker** has been appointed national sales counsellor for the Association of Gas Appliance and Equipment Manufacturers, according to an announcement by **Alan P. Tappan,** chairman of the Domestic Gas Range Division and vice president of Tappan Stove Co., Mansfield, Ohio.

A. B. PARKER

Formerly in charge of dealer sales development and dealer relations for the United Gas Corp. in Texas, Mr. Parker comes to the association with an extensive background in both dealer and utility merchandising. He first became associated with the United Gas Corp. in 1936 as dealer sales coordinator after several years experience in sales promotion for major appliance stores in Houston. When the United Gas Corp. decided to enlarge its dealer activities in the Houston division in 1938, Mr. Parker was made dealer sales supervisor to direct the activities of eight dealer sales coordinators in a utility-dealer program.

• **E. W. Willis,** formerly associated with United Gas Corp., Houston, has recently been appointed sales manager for Automatic Distributing Co., Houston, the outlet for CP Tappan ranges and Servel Electrolux refrigerators. With Mr. Willis at the present time are **J. B. Elliott** and **S. J. McAllister,** both of whom have had considerable experience in selling appliances.

• **James B. Black,** president of the Pacific Gas and Electric Co., was elected to the board of directors of Occidental Insurance Co., to fill the vacancy created by the recent death of **Stuart L. Rawlins.**

• **John J. Cunningham,** who has worked for the Pacific Gas and Electric Co. for 57 years, and is still in active service, was one of the honored guests at a banquet sponsored by the National Association of Manufacturers at the Palace Hotel, San Francisco, on February 12. Mr. Cunningham is now doing public relations work for the company. His father helped build the first gas plant in San Francisco in 1852, when customers paid $30 for the same service now obtainable for $.85. His first job was at the age of 15, and soon after he was given the task of selling gas service in San Francisco's Chinatown.

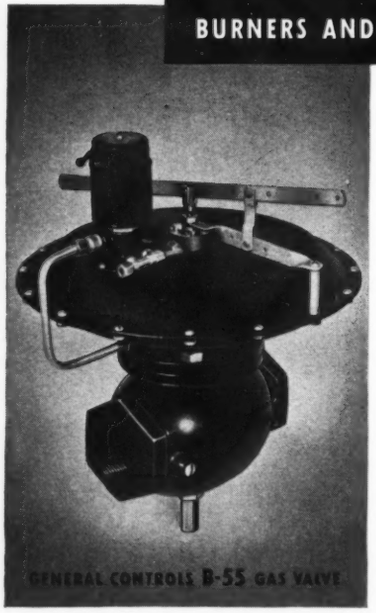
• **Addison C. Armstrong** has joined the Worthington Pump and Machinery Corp.'s organization at its Holyoke, Mass., Works, as manager of the Ordnance Division. He will be directly in charge of the production of ordnance equipment at that plant.

Mr. Armstrong was formerly affiliated with the Truscon Steel Co. as a departmental manager.

• Promotion of **Fred R. Schroeder** of Shreveport to the position of superintendent of the Geological department was announced today by officials of Union Producing Co., an associated company of United Gas Pipe Line Co., Shreveport, La.

Mr. Schroeder, a graduate of the University of Illinois, first started working for Union in 1930 as geological scout. In 1937 he was transferred to the general offices in Houston, returning to Shreveport in February, 1940, when the general offices of United Gas Pipe Line and its associated companies were moved there.

THE **ONE** CONTROL THAT MEETS *ALL* YOUR REQUIREMENTS FOR INDUSTRIAL & COMMERCIAL BURNERS AND FURNACES . . . . .



★ Opening time adjustable, 5 to 60 seconds.

★ Widest range in pressures. Handles up to 5 lbs.

★ Widest range of sizes. Available from ¾" to 6" I.P.S. for manufactured or natural gas.

★ Ample power is available for louvre control. Damper arm easily rotated to any desired position.

★ Low current consumption. In sizes up to 1½" I.P.S., uses but 8 watts.

★ A.G.A. and Factory Mutual approved.

★ Ask For New Bulletin. Write for your copy of the new 12-page gas control bulletin just off the press. Use it as your buyer's guide.

GENERAL CONTROLS

801 ALLEN AVENUE • GLENDALE, CALIFORNIA

New York · Boston · Philadelphia · Cleveland · Kansas City
Detroit · Chicago · Atlanta · Dallas · Houston · San Francisco

you wanted, lady?"

YES, HE'S THE ONE . . . and she wants him because she is interested in the Gas Refrigerator. She wants to hear more about that "silent freezing with no moving parts" she has read about again and again.

Surveys show that more and more people every year (in both the new user and replacement markets) are learning that only Servel Electrolux can give them the operating advantages they want. Yet these same surveys show that in 56.6 refrigerator sales out of 100, the prospect had not been called on by a salesman in over a year!

Trend to Gas Refrigeration Aided by Advertising

For fourteen years, Servel's advertising policy has been to tell people the basic reasons why Gas Refrigeration is *different,* why it is better.

It has continued this policy in spite of "gadget" competition, price wars and whatnot. The soaring opportunity today for selling more Gas Refrigeration is proof of the wisdom of Servel's policy.

The 1941 advertising continues to tell people the same simple facts about Gas Refrigeration, in the theme: "Servel Stays Silent . . . Lasts Longer." You can capitalize it by tying up with this theme in all your local advertising.

Not only will you realize direct merchandising profits from the increased sale of Gas Refrigerators. But you will protect your cooking load . . . build new load without increasing your investment . . . stimulate the sale of other gas appliances . . . promote "Gas for All Four Jobs."

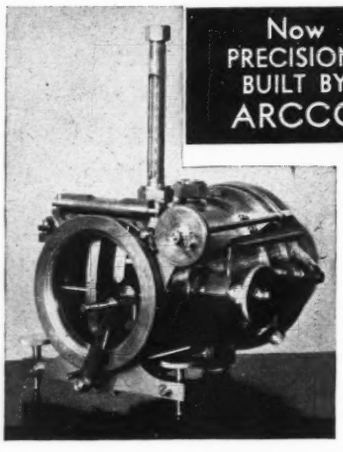
Wins good will for gas and gas service

ANUBIS

Portable

GAS

BALANCE



Now PRECISION-BUILT BY ARCCO

Weighs Less Than

20 POUNDS

Complete in Carrying Case

•

Specially Designed for

FIELD USE!

The *Anubis* Portable Gas Balance is extremely small, compact, TRULY PORTABLE, and built by ARCCO to withstand the very rough treatment necessarily encountered in field use. Accuracy—built into this Anubis instrument by ARCCO — is maintained throughout its service life, for it operates upon the simple principle that a bulb on the end of a balancing beam will rise or sink as the gas surrounding it is heavier or lighter than air. The usual "air check" is eliminated by a fixed calibration of the bulb and beam assembly. Rapid and convenient in operation, the *Anubis* Portable Gas Balance is adaptable for use under low pressure or vacuum under actual line conditions. *Write for bulletin.*

AMERICAN

RECORDING CHART CO.

3113 East Eleventh Street

LOS ANGELES, CALIFORNIA

H. BOEZINGER

• **H. Boezinger,** for the past five years district manager of the Los Angeles branch of the Pittsburgh Equitable Meter Co., of Pittsburgh, Pa., and the Merco Nordstrom Valve Co. of Oakland, Calif., has been elected a vice president of Merco-Nordstrom Valve Co. Mr. Boezinger is a graduate of Stanford University and prior to affiliating himself with the Merco-Nordstrom Valve Co., some 14 years ago, was engaged in petroleum engineering in the San Joaquin Valley and in Southern California.

• On January 25, **B. A. McCandless** of the American Gas Association Testing Laboratories, Cleveland, Ohio, resigned to report for service in the U. S. Army. Mr. McCandless, a First Lieutenant, is now stationed with the 35th Artillery at Camp Blanding, Fla.

Mr. McCandless is the third engineer to leave the Laboratories for service in the U. S. Army within the last six months. **Lt. J. B. Heinicke** has been stationed at the Naval Academy at Annapolis, Md., as instructor in chemistry since September, 1940. **Pvt. C. B. McIntosh** has been stationed at Fort Custer, Mich., since December. Mr. Heinicke was appointed for the duration of the emergency, while Mr. McIntosh volunteered to serve for a period of one year.

The only A.G.A. Headquarters' employee so far called is **Thomas Grimes** who was employed in the mailing department. He left New York on October 16, with the 27th Division to become a part of the 54th Brigade located at Ft. McClellan, Anniston, Ala., and has just recently been promoted to Corporal. Corporal Grimes was associated with the A.G.A. for four years previously and will be in the Army for at least one year.

• **W. F. Rockwell, Jr.,** vice president of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., will represent his company on an "industrial exploration tour" of six South American countries, March 17 to April 30, under the sponsorship of the National Research Council in cooperation with the Inter-American Development Commission in Washington. He will be a member of a party of 28 key industrial, banking and research executives which will tour Columbia, Peru, Chile, Argentina, Uruguay and Brazil, and will submit a report on industrialization possibilities to the Department of Commerce, the Inter-American Development Commission, and other interested government departments and agencies on its return.

• The appointment of **F. W. Morris** as sales manager for the Dayton Coupling Division, effective February 15, has been announced by The National Supply Co.

Mr. Morris has been associated with the Spang-Chalfant Tubular Sales Division since July 15, 1925, and for the past three years, has been located in Philadelphia, Pa., and will now headquarter at Pittsburgh, Pa. The plant for Dayton Couplings is at Carnegie, Pa.

• The division of the personnel of the Central Power Co. of Kearney, Neb., between the new owners, Consumers' public power district of Columbus and the Northwestern Public Service Co., purchasers of the electric and gas distribution systems, respectively, was announced recently by **V. M. Johnson,** new district manager for Consumers'. The change was effective immediately.

R. F. Pfeiffer, manager of the Kearney office for Central Power since 1917 and with the Grand Island Electric and Central Power Companies for 30 years, will manage the Kearney office for the gas company. Among the Central Power personnel that Mr. Pfeiffer is taking with him were **A. R. Rankin,** who will be chief clerk, and **C. R. Pledger,** gas superintendent.

• **Kenneth Hill,** formerly of Parsons, Kan., has begun his duties in the Arkansas City, Kan., offices of the Gas Service Co. Mr. Hill will serve as chief clerk, succeeding the late **C. J. Webber.** He was employed by the Gas Service Co. for the past 12 years in Parsons, Kan.

• The appointment of **Frank M. Wilkes** of Pine Bluff, Ark., as assistant to **A. Lieberman,** president and general manager of Southwestern Gas and Electric Co., Shreveport, La., was recently announced. Mr. Wilkes was formerly operating vice president of the Arkansas Power and Light Co., Pine Bluff, Ark.

• **W. H. Hamill,** formerly manager of the Watertown Gas Co., Watertown, S. D., returned to that position last month, succeeding **M. F. McCorkindael,** who has been transferred to Lykens, Pa., where he assumes managerial duties over interests of the Great Lakes Utility company there.

• **Signor J. L. Fink** has been made superintendent of the Gas Service Co. property at Topeka, it has been announced by **S. H. Koinm,** general superintendent of the company in Kansas City. Mr. Fink succeeds the late **George Swan,** who passed away on January 10.

Mr. Fink has been employed by the Topeka organization since 1934, and for the past few years has been assistant to Mr. Swan. He graduated from the University of Illinois in 1932, receiving a degree in mechanical engineering.

• Appointment has just been made of **T. J. Gallagher,** manager, Commercial Sales Department, The Peoples Gas Light and Coke Co., Chicago, to the Exhibitors' Committee of the National Restaurant Association—the group charged with the responsibility of planning all aspects of the 1941 National Restaurant Exposition to be held October 6-10 in Chicago in connection with the annual convention of the National Restaurant Association.

• **Roy H. Warmee** has been appointed sales promotion manager of Minneapolis-Honeywell Regulator Co., with headquarters in Minneapolis, according to an announcement by **C. B. Sweatt,** vice president in charge of sales.

Mr. Warmee was formerly sales manager of the Philadelphia Coke Co., Philadelphia, and is widely known in sales circles. He has appeared before many state and national sales conventions and has been a contributor to trade publications on sales subjects. In 1937 he won the national Howard G. Ford award for outstanding achievement in sales management and at the present time he is national chairman of the 1940 award.

• **Walter W. Clopton** has been appointed district manager for the United Gas Pipe Line Co., Shreveport, La., with headquarters in Wichita Falls, Texas. Mr. Clopton had been district superintendent for the company in Wichita since the first of the year.

Frances Burke, 1940 Winner, Atlantic City Beauty Pageant

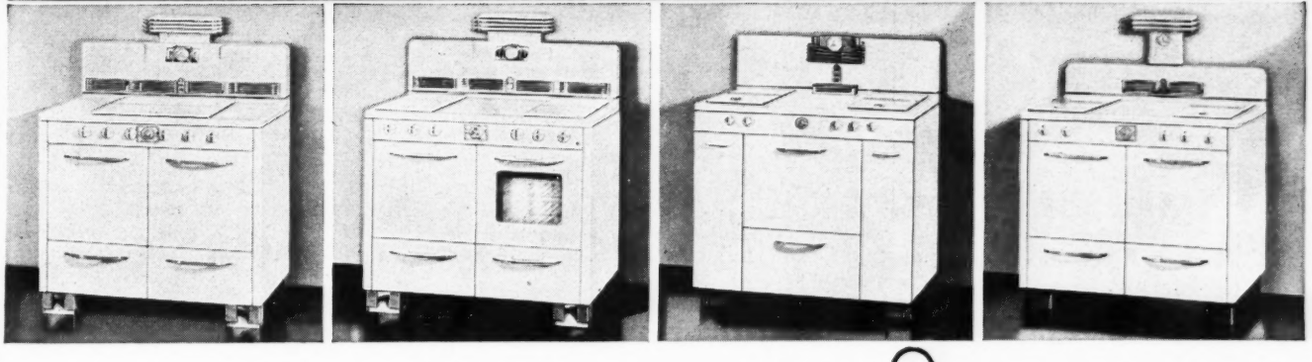
Miss America presents

MAGIC CHEF'S HIT PARADE OF 1941!

IT'S a hit, all right, a parade of gleaming dream-ranges that women want *and will buy.* Following the lead of the famous Magic Chef All-American Gas Range come seven new models . . . "hits" in every price class.

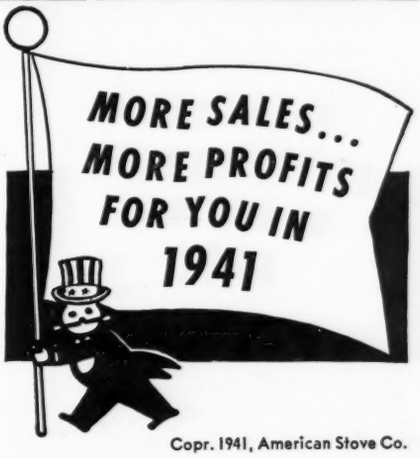
LAUNCHED WITH A LIVELY PROMOTION CAMPAIGN, the "Hit Parade of 1941" has 44 million national advertising messages to back it up. Window and floor displays, newspaper advertisements, colorful mailing pieces, a honey of a new traffic builder, and prospect-finder gifts. All the advertising and promotion helps you could want for a complete campaign.

A PARADE OF BRAND NEW MODELS



HERE ARE A FEW modern Magic Chefs with sleek lines, winners in performance! Some models with "Clearview" glass door oven. A well-rounded line for every price bracket from high to low. Retail salesmen will cheer their saleability . . . women will loosen their purse-strings readily.

WRITE, PHONE OR WIRE your Magic Chef representative today. Get your order for material in promptly for an early start on your spring campaign.



AMERICAN STOVE COMPANY

World's largest manufacturer of gas ranges

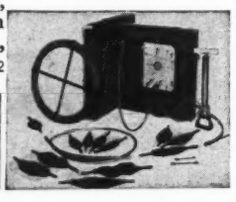
BOSTON . . NEW YORK . . . ATLANTA . . . CLEVELAND . . . CHICAGO . . . ST. LOUIS . . . SEATTLE
PHILADELPHIA . . SAN FRANCISCO . . . LOS ANGELES . . . PITTSBURGH
BALTIMORE . . . WASHINGTON

Copr. 1941, American Stove Co.

RIGHT THERE *is the leak!*

WITHIN INCHES OF A "WEEPER,"

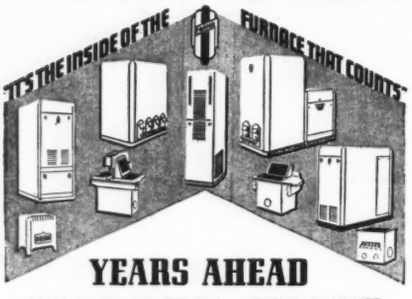
street foremen tell us the Bullard-Chicago Leak Locator finds leaks as readily as a main break. The method is positive because it works *inside the main*...unaffected by channeling, frozen ground, improper backfill or wind directions. Just a single opening is required for the test. Gangs learn the how and why of this Leak Locator readily, due to its operating simplicity. They save time and needless pipe repair expense because the accuracy of the B-C Locator requires only enough ground to be broken to allow working space. Write for Bulletin B-C which explains operating procedure. E. D. Bullard Co., 275 Eighth St., San Francisco, Cal. or 133 North Sacramento Blvd., Chicago, Ill. B-2



Everything **BULLARD** in Safety

BULLARD-CHICAGO LEAK LOCATOR

IT PAYS TO SELL



YEARS AHEAD

FRASER HEAT

Note these features:

FINEST MATERIALS
ADVANCED ENGINEERING
STREAMLINED CABINETS
A MODEL and SIZE FOR EVERY NEED
PRE-TESTED EFFICIENCY
PRECISION ADJUSTED
QUICK, SIMPLE INSTALLATION
EASIER SELLING

★

Send for Data Sheets of These Service-Free Profit Builders

FRASER

H. R. BASFORD CO. SAN FRANCISCO · LOS ANGELES — GAS HEATING EQUIPMENT — FRASER FURNACE CO. MANUFACTURERS STOCKTON CALIFORNIA

Gas Service Extensions Completed to Fort Sill

CONSTRUCTION of about five miles of 4-, 6- and 8-in natural lateral lines on the Fort Sill, Okla., military reservation, at Lawton, Okla., completes new extensions of service from lines of the Consolidated Gas Utilities Co., of Oklahoma City, to that post.

The company, in December, completed construction, through the B. & M. Construction Co., Oklahoma City, of 15 miles of 8⅝-in. O. D. loop pipe line to supply the Southwestern Light & Power Co., at Lawton, and U. S. Army authorities at Fort Sill with an additional supply of natural gas. The Southwestern Light & Power Co., distributes natural gas in Lawton. The new transmission line looped a similar sized line of the Consolidated Gas Utilities Co., which connects with a 10-in. line four miles east of Elgin. Construction of the lateral lines followed construction of this loop and were completed during February.

■ ■

Kentucky Pipe Line Survey To be Conducted Soon

It was announced recently that the Kentucky and West Virginia Gas Co. is planning a preliminary survey for construction of a pipe line from eastern Kentucky gas fields in Floyd County to tie into the Pittsburgh and West Virginia Gas Co. lines in the northern part of West Virginia. It is reported that construction work will be handled by Equitable Gas Co., which is affiliated with the other two companies.

The national defense program will be the main factor in the proposed line, as the local sources indicated construction would rest on the steel industry's need for additional gas for use in producing defense materials.

■ ■

Air Conditioning School Held by United Gas

A gas air conditioning sales training school was recently held by the United Gas Corp., Houston, Tex., to introduce the new feature to those who would be interested in the sale and promotion of the new service.

The opening session was conducted by John Gilbreath of Servel, Inc. He gave the history of the industry, air conditioning terms, the market served, the approach to this market, and information on the product. Other meetings included an inspection of the Servel installation and cooling unit at the company plant and lectures of a technical nature.

■ ■

Nora Natural Gas Co. Elects Officers

At a recent meeting of the Nora Natural Gas Co., Nora, S. D., I. M. Asbjeld was elected president; G. Ellingson, vice president and manager, and Card Oden, secretary and treasurer. The company has been incorporated under the laws of South Dakota and its object is to install a natural gas distribution system in the village of Nora.

■ ■

New Gas Field Discovered In California

A new gas field in western Fresno County, Calif., was recently discovered by the Jergins Oil Co., Long Beach, Calif. A. T. Jergins, president of the company, has rated the gas volume at 1,000,000 cu. ft. from 80 feet of Cretaceous sandstone lying below 7280 feet.

This exploratory job is novel in two respects. It is the first time, since the beginning of the century, that petroleum has been obtained from the Cretaceous formation in California. However, perhaps its chief distinction is that it is the only field discovery that has resulted from the chemical analysis of soil, which is based upon the geochemical theory that indications of oil or gas production might, through the centuries, work their way to the surface from petroliferous deposits lying at great depth.

■ ■

San Diego Gas and Electric Again Reduces Rates

Customers of San Diego Gas and Electric Co., San Diego, Calif., will receive reductions in their gas bills totaling $250,000 annually effective March 1, Commissioner Justus F. Craemer of the Railroad Commission announced January 28.

"This reduction in rates following the Commission's regular investigation of the company's operation is more remarkable in that it follows a $200,000 reduction of only a few months ago.

"Since the inception of the Commission's policy of continuous investigation four years ago, reductions in rates of this company have been found justified periodically. The activities of the commission, the city and the company have produced a consistent downward revision in utility rates in the area served by the company," Commissioner Craemer said.

■ ■

Hillsboro, Ohio, Given Town Gas Plant

The city councilmen of Hillsboro, Ohio, recently accepted the offer of the Columbus & Southern Ohio Electric Co., Hillsboro, to give the gas plant to the city of Hillsboro on condition the city withdrew its objection to the company's application to discontinue the gas service in Hillsboro.

The gift includes the land along the tracks of the B. & O. Railroad Co., the buildings and equipment and nine miles of mains. Under the agreement, the property was to have been transferred February 28, if approved by the Ohio Public Utilities Commission.

■ ■

Jones, Okla., to Build Natural Gas System

Presidential approval, February 11, of a $15,040 works progress administration expenditure, taken in conjunction with recent approval of a $15,000 bond issue voted by citizens of Jones, Okla., will enable that town to proceed with construction of a municipally-owned natural gas distribution system.

The municipality contemplates construction of a pipe line, about 26,000 ft. long, to connect with a main supply line of the Oklahoma Natural Gas Co.

■ ■

United Gas Completes Line In Louisiana Marshes

United Gas Pipe Line Co., Houston, Tex., has completed a 4-in. pipe line from the Bayou De Large field, through Lirette field, to Houma, Terrebonne Parish, Louisiana Gulf Coast district. The line is 14 miles long, 12 miles of which is through marsh and water beds, including one lake, two and one-half miles across. The line was laid under contract by Latex Construction Co., of Houston, Tex.

Metal Congress Will Stress Gas Heat Treatment

LATEST developments of gas as used industrially in the heat treating of metals will be in evidence when the Western Metal Congress and Exposition is held in Los Angeles May 19 to 23.

The meeting will be presented by the American Society for Metals in the Biltmore Hotel and Pan-Pacific Auditorium, in cooperation with 19 other technical societies, including the Pacific Coast Gas Association, the California Gas and Oil Association, and western chapters of the Liquefied Petroleum Gas Association. The exposition will be held in the auditorium.

Expectations are that 50,000 manufacturing plant operators, superintendents, production men, engineers, purchasing agents, metallurgists and metal workers will attend. W. H. Eisenman of Cleveland, secretary of the metal society, is in Los Angeles to make arrangements.

A. G. Zima, general chairman, said the theme of the congress will be "new aids to production."

The technical program is being arranged by Dr. D. S. Clark, program chairman. Dr. Clark, associate professor of mechanical engineering, California Institute of Technology, Pasadena, stated that metallurgical authorities from all parts of the country will present a series of lectures on technical subjects, many of them stressing the part gas plays in heat treating.

■ ■

Five-Year Progress Reported By Indianapolis Utility

Citizens Gas and Coke Utility, Indianapolis, Ind., recently reported on the progress the company has made in the five-year period, 1935-40. The company, in that time, has extended their mains over 247 miles, an increase of 28.2%. There has been an increase of 20.2% in the number of meters served by the company; from 77,364 in 1935 to 93,018 in 1940.

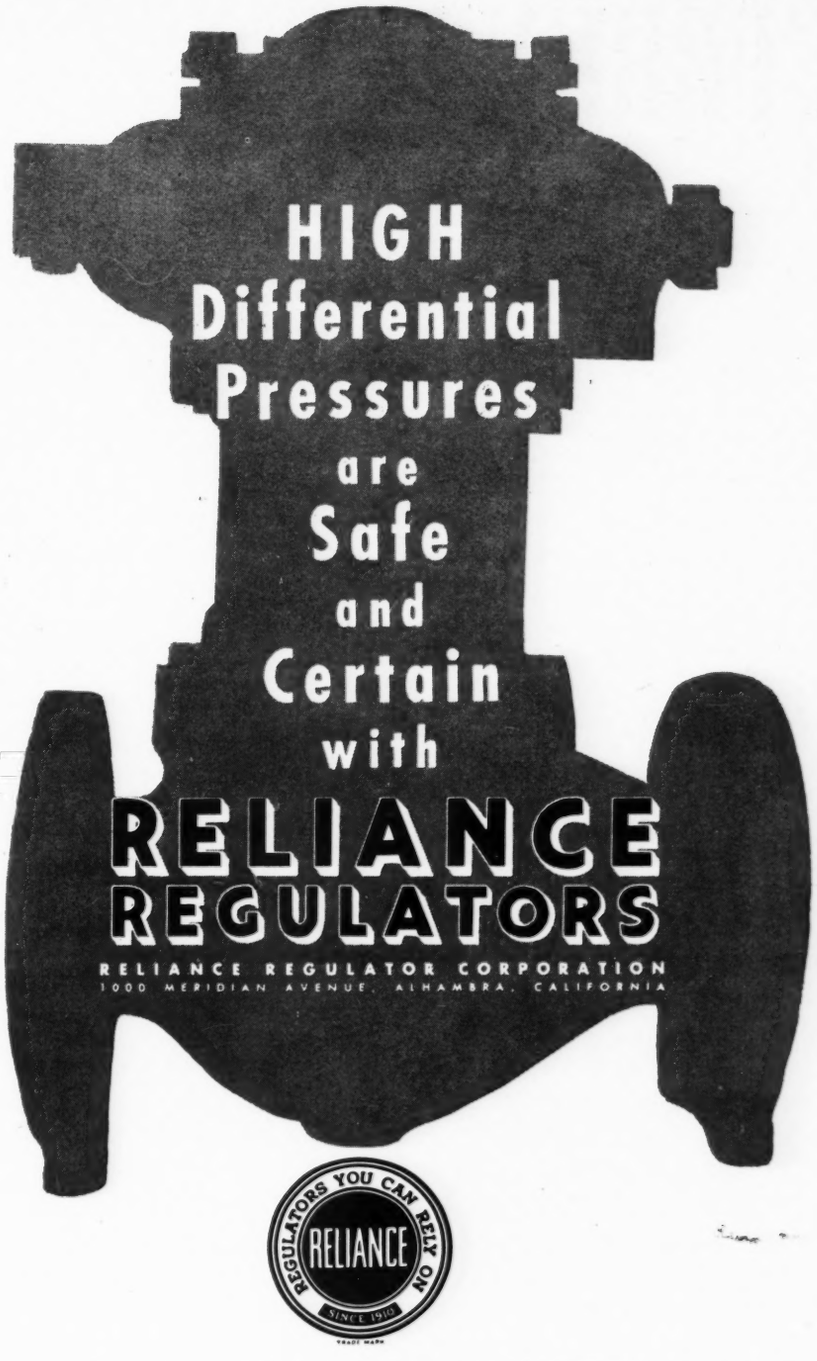
The gas consumption figures reached an all-time record in every bracket. Domestic consumption reached 2,509,532 M.c.f., an increase of over 33%. Commercial consumption jumped from 268 million cu. ft. in 1935 to 369 million cu. ft., an increase of 37%. Gas used for Industrial purposes, however, increased from 550 million in 1935 to over 1 billion feet in 1940, an increase of almost 110%.

In addition, the company has installed new water gas sets, new compressors, and new stoker feed boilers. A new 12 million cu. ft. gas holder has been constructed and 41 new coke ovens were added.

■ ■

River Repair Work Aided By Deep-Sea Diving Suit

In the repair of a leak which occurred in a 10-in. line crossing the Brazos River at a point 11 miles south of Richmond, Tex., United Gas Pipe Line Co., Houston, Tex., had one of the men in the gang complete the job, as an amateur diver, equipped with deep-sea diving equipment. The company's diving outfit, which is stored at the Clinton warehouse, was requisitioned for the job. Although the company usually employs a deep-sea diver, in this case it was regarded as feasible to use the services of members of the pipe line crew. The airpump for the diving suit was installed on a barge. The river was muddy and it was necessary for the amateur diver to work by feel alone.



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CURRENT Reading

Technical

Industrial Controlled Atmospheres — N. K. Koebel. *Iron Age*, Nov. 28, 1940, pp. 40-46. Part 2. In this section of this four-part article, attention is directed to pack hardening, atmosphere produced by carbonaceous muffle blocks, atmosphere produced by cracking liquid hydrocarbons, theory of a good atmosphere, etc.

Gas Engine Driven Generator Improves Operation at Franklin Heating Station—N. D. Adams. *Heating, Piping and Air Conditioning*, Nov., 1940, pp. 643-645. When natural gas by pipe line from Texas became available at Rochester, Minn., where the Franklin heating station is situated, a change-over from pulverized coal to gas was made, as difficulty had been experienced in maintaining efficiency at low boiler ratings and with fly ash. Conversion to gas was simple, as it was possible to install ring type burners in the refractory between the pulverized coal burner and the furnace. To obtain the industrial gas rate, it is necessary to be able to change from gas to the standby fuel on 15 minutes notice; with the combination of gas and pulverized coal, it is possible to do this, or to burn coal and gas at the same time. The next step in the program was the installation of a gas engine driven electrical generator unit. When the peak electrical demand became too great to be carried safely on one of the two existing steam turbine driven generators, the engine driven unit was installed, the engine being designed for conversion to oil operation by the installation of new pistons and a fuel injection system in case of failure of the gas supply (although the possibility of this is remote). Operating tests have indicated that the gas engine driven generator leads to worthwhile economies in gas and water consumption, has improved voltage regulation (constant voltage is essential for X-ray service), and it also provides a valuable emergency unit for service in winter.

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Cost of Steam With Gas as Fuel — I. E. Brooke. *Heating, Piping and Air Conditioning*, Nov., 1940, pp. 669-670. Charts prepared by author give complete data for easily computing the cost of fuel.

Constancy of Application is Important Factor in Cathodic Protection—Neil Williams. *Oil and Gas Jour.*, Dec. 5, 1940, pp. 53, 54. Results of work done by Houston Pipe Line Co. over a period of several years in the application of cathodic protection for its lines have led engineers of this company to the conclusion that one of the most important factors in the success or failure of protecting pipe from corrosion lies in the constancy with which the protective potential is maintained.

Determination of the Combustion Characteristics of Fuel Gases — Louis Shnidman. *American Gas Jour.*, Dec., 1940, pp. 36, etc. The problem of determining the combustion characteristics of a fuel gas is not simple. A large number of factors are involved. A procedure has been outlined which will aid in determining the combustion characteristics of a fuel gas. A complete and detailed discussion of the various factors of this procedure are outlined in a paper by J. S. Yeaw and the author (pp. 38, 39, 54).

Calculating Current and Potential Distribution in Cathodic Protection Systems —*Petroleum Engineer*, Dec., 1940, pp. 66, etc. Formulas based on data obtained in field facilitate prediction of requirements for protection and are useful in following performance of coatings.

Deviations of Natural Gas From Ideal Gas Laws—C. G. Brown. *Oil Weekly*, Dec. 30, 1940, pp. 30, etc. Part 1. The ideal gas laws are a most convenient approximation and give entirely satisfactory results for most engineering operations conducted at low pressures. At pressures in excess of about 50 lbs. per square inch, the deviations of natural gas from the ideal laws are so great that modern practice requires more accurate data.

High-Temperature Gas Fired Test Furnace—C. L. Thompson and H. G. Wilcox. *American Gas Jour.*, Dec., 1940, pp. 42, 43. A high-temperature, gas-fired test furnace, capable of maintaining temperatures above 1725° C., is described. Neither the air nor gas is preheated. Features of the furnace are uniform temperature distribution, ease of control, and quiet operation.

Determination of Organic Sulfur in Combustible Gas—F. M. Rogers and R. F. Baldaste. *Ind. and Engr. Chem.*, Anal. Ed., Dec. 15, 1940, pp. 724, 725. Purified air is used to burn the gas in a special burner, the sulfur dioxide resulting from the combustion of the gas is absorbed in sodium hypobromite solution, and the sulfate in this solution is determined turbidimetrically. The method is adapted to the determination of less than 0.2 grain (12.96 mg.) of sulfur per 100 cu. ft. (283.2×10^4 cc.) of gas.

Constitution Diagrams and Composition of Methane and Ethane Hydrates—O. L. Roberts, E. R. Brownscombe, and L. S. Howe. *Oil and Gas Jour.*, Dec. 5, 1940, pp. 37, etc. Gas hydrates present a larger problem in pressure maintenance and gas recycling as high injection pressures are utilized. This article is concerned with the relation of the usual hydrate curve to the other equilibria curves for the water-methane systems.

Physical Properties of Hydrocarbon Mixtures in Condensate Production—F. H. Dotterweich and F. V. L. Patten. *Gas Age*, Dec. 5, 1940, pp. 24-29. The production of petroleum and natural gas is being accompanied by drilling to greater depths, and the discovery of high-gravity reserves, combined with increased production pressure and temperature, has given rise to new problems heretofore not encountered by production engineers.

The Determination of Factors Affecting Reservoir Performance — M. Muskat. *Petroleum World*, Dec., 1940, pp. 27, etc. Data which should be taken during the course of development of oil and gas reservoirs are reviewed and discussed from the point of view of their application to problems of reserves. An A. P. I. paper.

Soil Resisting Data Aid Electrolysis Studies—W. G. Wilson. *Oil Weekly*, Dec. 16, 1940, pp. 40, etc. Soil characteristics which may be evaluated and tabulated for comparative purposes in studying pipe-line corrosion include texture, moisture and oxygen content, acidity, chemical composition, and resistivity. All these have direct bearing on the corrosiveness of the soil, and may in addition exert physical as well as chemical action on protective coatings and wrappings.

Estimating Availability of Natural Gas Reserves—P. C. White. *Petroleum Engineer*, Dec., 1940, pp. 23-28. Although it is realized that back-pressure open-flow test curves are not perfectly constant year after year and sometimes change, the author believes after analyzing hundreds of tests, that a series of tests reflects characteristic curves that are a very sound basis for making forecasts of the availability of gas reserves, and for analyzing production problems for the future.

Improved Construction Methods on Natural Gas Line to Milwaukee — H. L. Flood, *Petroleum Engineer*, Dec., 1940, pp. 29-32. Many innovations in pipe-line construction are in use—all welded 20-in. line is important extension of Texas-Chicago line.

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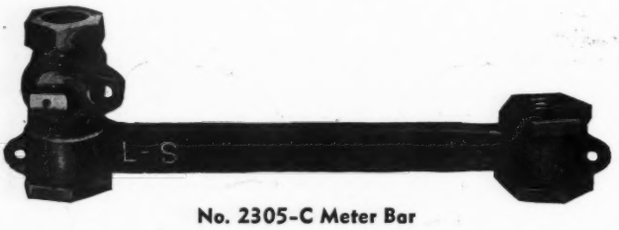

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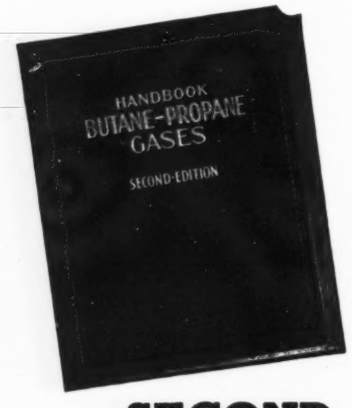

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SECOND EDITION (Latest Revision Nov., 1938)

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A.G.A. Prize Paper Contest Publicity Made Available

TO AID companies in publicizing the American Gas Association Prize Paper Contest on the timely subject "How I Would Increase Public Acceptance of Gas as the Ideal Domestic Fuel," the Committee on Personnel Practices, has made available descriptive posters for company bulletin boards and leaflets for distribution. Mr. Child, chairman of the committee, says the response has been so much greater than anticipated that three reprints of the bulletin and leaflet have been necessary to satisfy the demand. In addition, many companies have called attention to the contest in their house organs. It looks as if the judges, president T. J. Strickler, vice president George F. Mitchell and vice president George S. Hawley of the American Gas Association, will have no easy task in picking the ones who will pocket the two prizes of $150 and $75.

There is still time to encourage participation in the contest and the committee will be glad to furnish copies of the folder and poster to company members on application to A.G.A. Headquarters.

■ ■

Pipe Line Construction Contracts Awarded

Announcement was made in New York recently by the Southern Natural Gas Co., Birmingham, Ala., that a contract had been awarded to Ford, Bacon and Davis Engineering Corp. to supervise construction of 135 miles of new pipe line to cost $2,200,000. This line will have extension from the present western terminus of the system in the Monroe gas field to the new Logansport gas field located south of Shreveport near the Louisiana-Texas state line.

There will be required approximately 16,000 tons of 14-in. pipe, orders for which have been placed with the National Tube Co. and the Republic Steel Corp. The line is to serve cities in other states and will prove an auxiliary supply to that which now exists in the Monroe gas field.

■ ■

Cities Service Gas Co. Buys Large Compressor

The Cities Service Gas Co., Bartlesville, Okla., recently installed at its Pampa compressor in Gray county, the Panhandle field of northwest Texas, a large compressor, declared to be the largest ever built by the Cooper-Bessemer Corp. It is a 1000 hp. 10-cylinder vertical V-type unit and is designed for the station which is the unit on the 20-in. line from the Panhandle field to Wichita and other markets. The installation increases the plant capacity materially and it augments the six horizontal 1000-hp. compressors already in use.

■ ■

California Appliance Group Opens Gas Range Campaign

The Gas Appliance Society of California has announced a "Spring Gas Range Campaign" to be conducted from March 7 to 15, inclusive, during which a special campaign trade-in allowance of 10% of the established retail price of the new range may be allowed for any old range actually in use and regardless of age that is traded in on a current new model of any make of "Sticker Plan" gas range, having a regular retail cash price of $129.50 or more (stripped) sold during the period March 7 to 15, and installed not later than April 7, 1941.

Connelly Announces Photo Contest For Gas Company Employees

NATURAL and manufactured gas men throughout the country who are camera enthusiasts will be interested in the amateur photographic contest just announced by Connelly Iron Sponge & Governor Co. of Chicago, Ill., and Elizabeth, N. J. Seventeen prizes totalling $255.00 in cash are being offered by this manufacturer of gas purifying materials and equipment. The contest, which runs from March 1 to June 30, 1941, is open only to gas company employees and their families.

R. W. Stafford, engineer of the Connelly Company, released full details recently.

Competition is open only to officers and employees of any gas company in the U. S. A. and Canada and members of their families. To be eligible, all prints must be not smaller than 2¼ in. x 3¼ in. Contest is confined to black and white photographs only. Prize winning prints will become the property of Connelly Iron Sponge & Governor Co. with the understanding that they may be used for reproduction or advertising purposes whenever desired.

A grand prize of $100 is offered for the photograph which in the opinion of the judges is the best of all photographs submitted. Class prizes also will be awarded.

Entry blanks and full information may be had by writing the Contest Manager, Connelly Iron Sponge & Governor Co., 3154 South California Avenue, Chicago, Ill.

■ ■

Servel, Inc., Again Sponsors High School Food Project

Bruce Barton, well-known author and former Congressman, heads the Panel of judges for Servel's Second High School Food Project now going on among high school and junior-high school students of home economics. This was announced by Jane Tiffany Wagner, director of Home Economics for Servel, Inc., of Evansville, Ind., sponsor of the project, which last year drew 8000 students from all parts of the country.

The objectives of the Food Project are individual student achievement in food work, and a knowledge of the use of modern home refrigeration in food purchasing, preservation and preparation. Names of winners will be announced in May.

To each of six national winners will be awarded a $100 college scholarship, and to the school laboratories of the six students receiving national honors Servel will present a Servel Electrolux refrigerator. The grand national award will be a summer vacation trip to California or Washington, D. C., as selected by the grand national winner and her home economics teacher, who will both receive the travel award.

■ ■

Technologists and Engineers Needed For National Defense Program

The U. S. Civil Service Commission has announced an open competitive examination to secure Technologists for National Defense work. Difficulty is being experienced in filling positions in such branches of technology as explosives, fuels, plastics, rubber, minerals, and textiles. Persons qualified in these branches are particularly urged to file application. Applications will be rated as received until December 31, 1941.

Qualified persons are also urged to file their applications for the position of chemical engineer. Applications for this position will be rated as received at the Commission's Washington office until further notice.

Further information and application forms may be obtained from the Secretary of the Board of U. S. Civil Service Examiners at any first—or second-class post office, or from the United States Civil Service Commission, Washington, D. C.

■ ■

Montana-Dakota Utilities Co. To Issue Additional Stock

Montana-Dakota Utilities Co., a Delaware corporation having its principal business office at Minneapolis, Minn., has applied to the Federal Power Commission for authority to issue 5000 shares of its 5% Series Preferred Stock of $100 par value per share and 10,000 shares of Common Stock of $10 par value per share. The Common Stock is to be issued only upon the exercise of Common Stock Purchase Warrants to be given to purchasers of the preferred shares, entitling holders of the Warrants to purchase two shares of Common Stock for each share of Preferred Stock.

The purpose of the issue, the application states, is to reimburse the treasury of the Company for a part of the expenditures made for net additions to property, plant and equipment for the period from May 1, 1939, to December 31, 1940.

Secure MAXIMUM EFFICIENCY THROUGH REYNOLDS COORDINATED Gas Control

The necessity of maximum Efficiency in Gas Control with the new complex installations of modern heating equipment is easily achieved with REYNOLDS Regulators. All Reynolds Regulators from the big ton capacity giant down to small low pressure inches W. C., are carefully coordinated and tuned to function together. There is a Reynolds Regulator especially designed for every Gas Control need.

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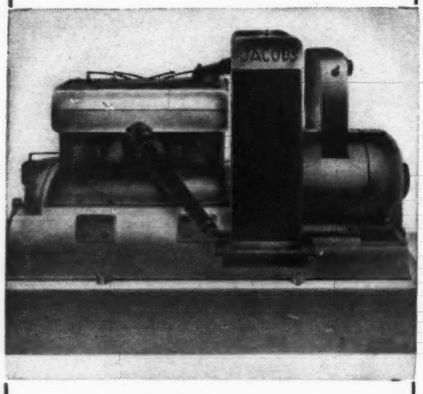

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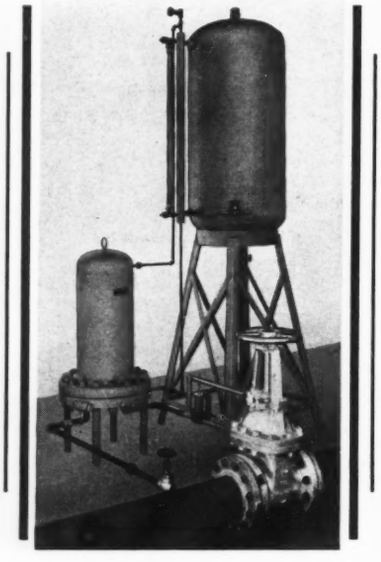
PIPE LINE DIVISION

MINNEAPOLIS, MINNESOTA

Magic Chef Victory Banquet

WITH double cause for rejoicing, American Stove Co. salesmen of the Central Sales Division gathered for the Magic Chef Victory Banquet at Hotel Statler in Cleveland, on January 10. Under leadership of E. B. Hanmer, central sales division manager, they were 1940 winners of the Louis B. Stockstrom trophy for the division having the best sales record for the year on Magic Chef Gas Ranges. To top this divisional achievement, announcement was made that 1940 was the biggest year in American Stove Co. history.

Another division to carry off honors was the Eastern Sales Division, who celebrated the winning of the All-American trophy for the year, under guidance of C. A. Young, eastern division manager. This trophy was awarded to the division selling the greatest number of Magic Chef All-American models per salesman.



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McCall Gas Appliance Study Wins Advertising Award

The study of the household gas appliance business which was made in 1940 by the McCall Corp., publishers of "*McCall's*" and "*Redbook*" magazines, at the invitation of the Association of Gas Appliance and Equipment Manufacturers, has received the Medal Award for research achievement in the 1940 Annual Advertising Awards, originally known as the Harvard Bok Awards and now administered by "*Advertising & Selling.*"

The McCall household gas appliance study was made under the supervision of Arthur Hirose, director of research for the McCall Corp., and was originally presented by him to the AGAEM at its annual convention in Atlantic City in October. The study covers ranges, refrigerators, water heaters and house-heating.

■ ■

General Controls Company Opens Two New Branches

Announcement is made by General Controls Co., Glendale, Calif., of the opening of a new factory branch office at 4515 North Broad St., Philadelphia, Pa.

In charge of the new office will be George Le Fevre, for the past three years sales engineer in the company's New York City branch. The establishment of this new branch enables General Controls to carry complete stocks of motorized and solenoid valves and other automatic controls for industrial application, gas and oil heating and for refrigeration in Philadelphia and, in conjunction with the company's branches in New York City and Boston, to serve all points on the eastern seaboard.

The company has also established a direct factory branch office at 1100 Cadiz Street, Dallas, Texas. In charge of the newly opened branch is Robert C. Allen, sales engineer. Allen is a native of Fort Worth and has lived in Houston and Dallas for many years. He attended the University of Texas. Previous to his association with General Controls he was connected with the Western Auto Stores, Houston Warehouse Division. This branch enables General Controls to serve directly its increasing Texas business.

■ ■

Robertshaw Thermostat Co. Aids Home Economists

To announce a new education service for home economics teachers, the Robertshaw Thermostat Co., Youngwood, Pa., gave luncheons at the Blackstone Hotel in Chicago on February 7 and the Waldorf Astoria Hotel in New York on February 14, which were attended by many home economics experts of newspapers, radio, and magazines.

Including a 24-page textbook, large wall charts for lecture use, and a student folder crammed with useful information, the new educational service presents for the first time a complete and scientific study of the importance of accurately measured heat in baking and roasting, and demonstrates graphically the good results of optimum temperature and the adverse effects of deficient or excessive heat.

Luncheon speakers included John A. Robertshaw, Company president, who welcomed the guests, H. T. Ryan, vice president, who outlined the background and progress of oven heat control, and Eleanor Howe, home economics writer, radio lecturer, and co-editor of "What's New In Home Economics."

"CLEVELANDS" are Preferred Equipment for Gas Trenching . . . .

Because:—They exactly meet conditions, whether it's a cross-country transmission line or a short service extension in the city.

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Three Prizes, each
$10.00 in cash

Ten Prizes, each
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Don't Delay
Get Started Now

Send for Entry Blank!

The Connelly Photographic Contest open only to Gas Company Employees

Amateur photographers — here's your opportunity to win from $5.00 to $100.00 in cash for interesting photographs taken right in the gas plant where you work. Contest is divided into three classifications and you may enter any or all of them. No matter what kind of camera you use, you have an equal chance, for interesting subjects and good composition are just as important as photographic excellence.

★ Officers and employees of any gas company in the U.S.A., as well as their families, are eligible.
★ Contest starts March 1, and closes June 30, 1941.
★ All photographs entered will be judged on the basis of composition and technical execution as well as pictorial value and appropriateness of subject.
★ Each contestant may enter as many prints as desired in any or all classes.

NO ENTRY FEE — NO OBLIGATION

Entry Blank includes rules and complete explanation. Send for yours today. Contest Manager, Connelly Iron Sponge & Governor Co., 3154 S. California Avenue, Chicago, Illinois.

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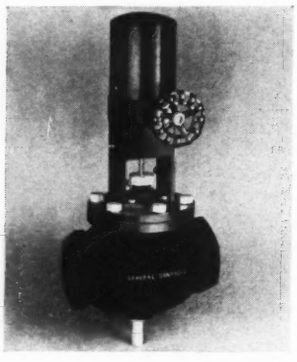
CHICAGO, ILL. – ELIZABETH, N. J.

MODERN *Products*

Manual Reset Valve

General Controls Co., Glendale, Calif.
Model: Series MR-1-2.
Description: To fulfill an increasing demand for a manual reset valve which affords extremely safe and positive control of water, air, gas, steam and oil, in most all industrial applications, is offered this new Series MR-1-2 Valve. The safety feature of the control should appeal to every valve user. Upon current failure, the valve closes; the valve cannot then be opened to the flow unless current is available and then only by manually resetting the valve. Furthermore, there is no possible way for anyone to open, or hold or prop the valve open without the restoration of current. This permits operators or attendants to make a thorough check of whether a safe condition exists before the valve is restored to service. The control is operated by an external magnetic operator which is not subject to dirty, viscous or high temperature fluids that the valve may be handling, insuring most positive control at all times. Current consumption is extremely low, for the operator is equipped with a double release mechanism, minimizing energy requirements for valve operation. This makes it possible to operate the unit directly from a dry cell or standard pilot generator with but 5/1000 of a watt, or for 115 and 230 Volt D.C. operation with but 5/10 and 1 watt, respectively. All A.C. model valves use an integral rectifier; energy consumption on these models is but 2 watts. Series MR-1-2 Valves are available in sizes from ½" to 6" I.P.S., screwed or flanged bodies. Although unit is furnished with iron body, bronze trim, special alloy bodies with stainless or special trims are available. With the exception of semi-dust-tight or drip-proof enclosures, the valve will operate in any position. Explosion-proof construction is made in accordance with recommendations of Class I, Group D, for hazardous locations.



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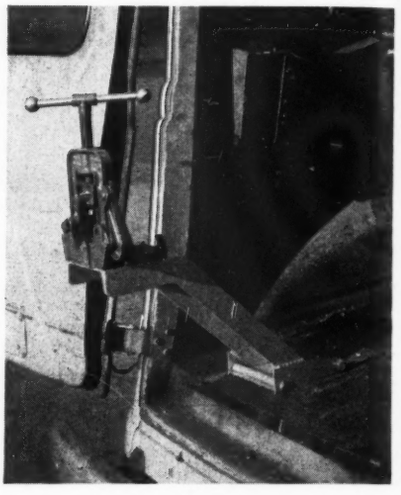

Vise Bracket

Jiffyon Mfg. Co., Cleveland Heights, Ohio.
Model: Folding and Removable Vise Bracket.
Description: A brand new "mechanic's gadget" is the Jiffyon Folding and Removable Vise Bracket. Designed by a master mechanic for his own use, this all-steel bracket is easily attached to the floor of a truck and can be used for mounting either a pipe or machinist's vise. Sturdily constructed of steel sections, the Jiffyon Vise Bracket, when in working position, provides rigid support for threading, filing, sawing and other heavy work. The bracket has been especially designed to reduce working effort by locating the vise at a convenient height and providing ample room for the use of large wrenches, pipe threading tools, pipe cutters, etc. The Jiffyon Folding and Removable Vise Bracket lives up to its name as it can be attached or removed in an instant or can be folded back into the truck out of the way.

■ ■

Portable Potentiometer

The Foxboro Co., Foxboro, Mass.
Model: 8105 Single Range and 8106 Double Range.
Description: Furnished with a welded aluminum case for protection against rough handling, moisture, dust and fumes. The temperature scale is 17 inches long, with black numbers and lines on a white background. This provides an open scale easily read to very close limits. Precise balancing is made easy by the vernier-type dial, due to the increased mechanical sensitivity which is inherent in this vernier. A small coil plate, when connected, connects a thermally responsive resistance coil into the circuit, which accurately compensates for cold junction temperature changes, thus eliminating errors from that source. The standard cell is mounted so that the instrument can be operated either horizontally or vertically to suit the operator, with no change in accuracy. The vernier-

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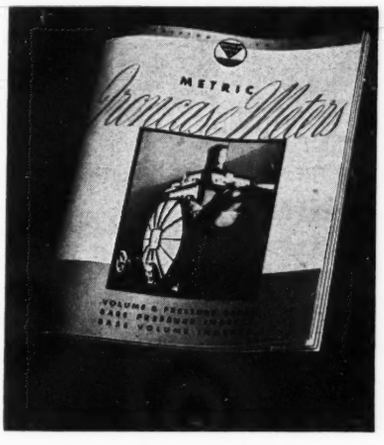
type rheostat enables the operator to standardize the circuit precisely and conveniently. The switches in the potentiometer circuit and those for changing from one range to another are of the rotary type. There are no push-button or plug-type connections. Large binding post terminals are provided for external connections. Total weight is 12½ lbs. Accuracy is 1/5 of 1% of scale range. A variety of scale ranges are available, calibrated in °F., °C., and in M.V.

Catalogs

American Meter Company's revised new Catalog EG-40 on Metric-American Ironcase Meters gives a comprehensive, up-to-the-minute report on developments in these types of meters (for both low and high pressures) to meet all requirements and exigencies of present-day service. The facts are based not only upon engineering activities and tests, but also on a large cross-section of approved installations in the field.



Design, construction and maintenance features of regular and special Ironcase meter types are described in detail, and complete specifications presented. Correct use of Westcott-American volume and pressure gages, and Metric-American base pressure and base volume indexes, in connection with Ironcase meters, also is discussed.

A complete and attractive catalog, No. 41, has just been issued by the W. J. Schoenberger Co., Cleveland, Ohio, covering its full line of valves, fittings, burners, lighters and accessories for gas appliances. Special sections of the catalog are devoted to: Lighter parts and accessories; valves for range, space, heater, water heater, boiler and furnace burner; shut-off and pilot valves; burner fittings; orifice plugs and hoods; lighter and push-button valves; copper connectors and parts; flared shut-off valves and miscellaneous; "Tru-Seal," compression coupling and S.A.E. tube fittings; and handles. Also given are convenient tables of decimal equivalent and orifice capacity tables, and measurement charts.

The Chaplin-Fulton Manufacturing Co., Pittsburgh, Pa., has just issued Bulletin 130, entitled "Regulators for Compressor Control." This 12-page leaflet gives specifications, operating data and prices for their types 130-130S-130PS-131-131PS regulators. Full diaphragm and regulator dimensions are given.

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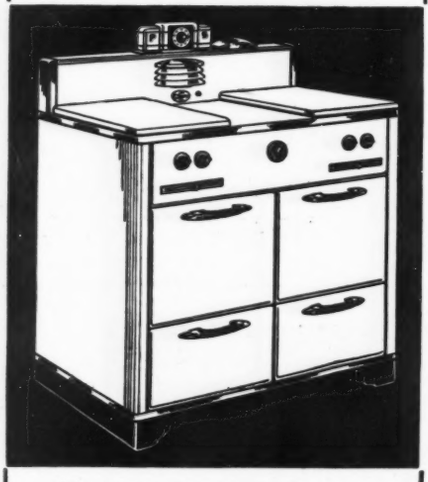

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Obituaries

Morris Wistar Stroud

Morris Wistar Stroud, former president of the American Gas Co. and retired director of The United Gas Improvement Co. and the Philadelphia Electric Co., died at his home in Villanova, Pa., recently, after a long illness. He was 80 years of age.

A native Philadelphian, Mr. Stroud's association with the American Gas Co. began in 1891 when he was elected secretary and treasurer. He was elevated to the presidency and to its board of directors in 1900. Control of the American Gas Co. was acquired by The United Gas Improvement Co. in 1925, but Mr. Stroud continued to serve as president of the American Gas Co. until its dissolution in 1936. He was elected to the boards of directors of U.G.I. in 1926 and Philadelphia Electric Co. in 1929, from which he retired in 1937 and 1938, respectively, because of ill health. He was a director of the American Gas and Electric Co., a New York holding company, and was for many years a director of the Huntington and Broad Top Mountain Railroad and Coal Co.

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Harry C. Ross

Harry C. Ross, who was appointed personnel manager of the Pacific Gas and Electric Co., in November last, died in St. Luke's hospital, San Francisco, on February 21. He was 59 years old.

Born in Baltimore, Md., Mr. Ross joined a utility company there as an office boy at the age of 16. and seven years later he was superintendent of the plant. Later he worked with utility companies in Pittsburgh, Pa., and in Southern California. He joined the PG&E in 1915 at Fresno, and later became manager of the claims and safety division at the San Francisco headquarters, where he served until appointed as personnel manager in November, 1940.

■ ■

David Judkins Collins

David Judkins Collins, for almost 45 years a prominent figure in gas utility sales work in Philadelphia, died February 2 at his home in Swarthmore. He would have been 81 years old within a few months.

His utility career started in 1885, with The United Gas Improvement Co., after graduation from the Eastburn Academy in Philadelphia. With the exception of a few years spent in the engineering department of the Omaha (Nebraska) Gas Co., he had remained continuously in the sales divisions of U.G.I., The U.G.I. Contracting Co., of which he was vice president in charge of sales, and United Engineers & Constructors, Inc. During those years until 1929, when he retired, he had gained a reputation in the gas industry for his work on the development and sale of U.G.I. gas apparatus. In addition to his gas utility sales work, Mr. Collins had long been identified with the Tampa (Florida) Gas Co.

His former club and association memberships, from most of which he had retired in the past few years due to ill health, included the Union League of Philadelphia, the Rose Tree Hunt Club, Gibson Island Yacht Club, American Gas Association, New England Gas Association, New Jersey Gas Association, and the Wisconsin Utilities Association.

■ ■

George J. Swan

George J. Swan, general superintendent of the Gas Service Co. at Topeka, Kan., died recently at the age of 60 as a result of a sudden heart attack.

Mr. Swan went to Topeka in 1905 as superintendent of the gas company, known at that time as the Excelsior Coke and Gas Co. The firm later was changed to the Consumers Light, Heat and Power Co.; later to the Capitol Gas and Electric Co., and was acquired by the Cities Service interests in 1924. Mr. Swan was made manager of the gas company in Topeka in 1921 and held this position until 1937, when he became general superintendent.

■ ■

John Duncan

John Duncan, president of the Litchfield & Madison Railway Co. and executive vice president of Laclede Power & Light Co., died recently at his home.

Mr. Duncan, former president of St. Louis Gas & Coke Co. and a former member of the board of directors of the Laclede Gas Light Co., had been absent from his office since last summer, and had been confined to his bed since September.

■ ■

Philip G. Newbrandt

Philip G. Newbrandt, superintendent of the Gas Production department of the Cincinnati Gas and Electric Co., Cincinnati, Ohio, died suddenly at his home in Johns Hill, Ky., on January 7. Mr. Newbrandt joined the Cincinnati company in 1909, and had served as superintendent until the time of his death.

■ ■

Joseph Gosling

Joseph Gosling, well known in the oil fields of Southern California, died recently as a result of a heart ailment. Mr. Gosling had been very active in the oil and gas business, first as an independent operator in leases and royalties, and, since 1924, as a member of the leasing department of the Signal Gasoline Co.

■ ■

Charles O. Gossard

Charles O. Gossard, North Kansas City, office manager of the Kansas City Gas Co., died February 15 in Kansas City. Mr. Gossard was 53 years old. He was a native of Kansas City, and was very active in numerous civic affairs in North Kansas City and prominent in American Legion work.

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